



GE Healthcare
Monitoring Solutions

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October 30, 2008

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Re: GE Healthcare *Ex Parte*
ET Docket No. 08-59

Dear Ms. Dortch:

GE Healthcare (“GEHC”) takes this opportunity to provide additional information regarding its Medical Body Area Networks Service (“MBANS”) proposal, which is the subject of this proceeding.

In several previous filings,¹ GEHC and other parties have raised a key issue that the Aerospace & Flight Test Radio Coordinating Council (“AFTRCC”) to this point has still failed to substantively address—specifically, that significant spurious out-of-band emissions (“OOBE”) can be expected into the 2360-2400 MHz band from a variety of sources already operating in the same or adjacent bands. These sources include Amateur Radio; Part 27 WCS transmitters; Part 18 ISM devices (*e.g.*, microwave ovens); and ubiquitous Part 15 unlicensed devices such as cordless telephones, 802.15.4 Zigbee, 802.15.1 Bluetooth, and 802.11 Wi-Fi devices. OOBE from Part 15 transmitters are particularly worth noting, given the extremely widespread and ever-increasing use of such devices, including many portable devices, the highly uncontrolled nature of the operations, and their potential proximity to aeronautical mobile telemetry (“AMT”) receive sites.

Part 15 unlicensed operation in the 2400-2483 MHz band is limited to 1W EIRP, with OOBE into the 2390-2400 MHz portion of the proposed MBANS band limited to only 20-30 dB lower than the highest level of the fundamental emissions.² Therefore, unlicensed devices may emit up to 10 dBm in this upper portion of the proposed 2360-2400 MHz band, 10 dB higher than the proposed MBANS fundamental emissions limit. The Part 15 OOBE limits for the remaining 2360-2390 MHz portion of the proposed

¹ See Reply Comments of GE Healthcare, ET Docket No. 08-59 (filed June 11, 2008) at B-1; *Ex Parte* filing by the Wireless Communications Association International, Inc., ET Docket No. 08-59 (filed Sept. 25, 2008); and *Ex Parte* filing by Paul Kolodzy, ET Docket No. 08-59 (filed Oct. 20, 2008).

² See 47 C.F.R. § 15.247(d).

band are field strength limits of 54 dBuV/m/MHz measured at a distance of three meters on a root mean square average basis³ and 74 dBuV/m/MHz at a distance of three meters peak.⁴

Even assuming a greater than free space path loss exponent of n=2.4, the separation distances required to ensure that Part 15 unlicensed device OOB^E satisfies the ITU-R Recommendation M.1459 power flux density (PFD) limit cited and used by AFTRCC in its coexistence analyses in this proceeding are substantial (see Exhibit A). As GEHC has previously pointed out, 1.2 km separation is required for average spurious emissions in the 2360-2390 MHz portion of the band to meet the M.1459 PFD limit. However, AFTRCC has admonished the use of average interferer EIRP in GEHC's early MBANS coexistence analysis, and AFTRCC suggested that *peak* interferer EIRP should be used instead.⁵ When allowable peak unlicensed device OOB^E are considered, in accordance with AFTRCC's suggestion, the required separation distance increases to 8.1 km. In the upper 2390-2400 MHz portion of the proposed band, the results of applying AFTRCC's suggested coexistence criteria are even more striking, suggesting that as much as 162 km of separation would be required to prevent interference to AMT from a single unlicensed device.

To demonstrate further the potential effects of Part 15 unlicensed device OOB^E if AFTRCC's analyses are to be believed, GEHC has undertaken a review of Part 15 device compliance data. The results of this review are summarized in Exhibit B. Although very cursory,⁶ this review demonstrates that an extensive variety of devices deployed and used pervasively today exhibit actual spurious emissions at or very near to the maximum permissible limits.

Several detailed observations are worth noting. First, while all of the devices GEHC identified as having significant OOB^E into the 2360-2390 MHz band have 802.11 Wi-Fi support as a common denominator, they nevertheless represent a wide array of products (e.g., Wi-Fi access points, notebook computers, smartphones, digital music players) from multiple leading manufacturers, including many products designed for portable and/or outdoor use.

Second, the phenomenon is not limited to any one Wi-Fi standard protocol, modulation type, data rate, or channel. Significant OOB^E is documented for devices operating in

³ See 47 C.F.R. § 15.209(a).

⁴ See 47 C.F.R. §§ 15.209(a) and 15.35(b).

⁵ See Reply Comments of AFTRCC, ET Docket No. 08-59, at 7 and page 1 of the Engineering Statement (filed Jun. 11, 2008).

⁶ There have been approximately 16,000 Part-15 devices type-certified for operation in the 2400-2483.5 MHz band during the past decade. Moreover, there appears to be significant variability in the rigor of both compliance testing and test data reporting, since the test reports filed for many devices contained little or no information on band edge radiated emissions in the 2360-2390 MHz range (see e.g., FCC IDs: BEJKS20, ACJ96NKX-HGC200, ACJ9TGCF-Y71, ACJ9TGCF-W52, ACJ9TGCF-W51, ACJ9TGCF-T51, ACJ9TGCF-T52, A3LSCHI760, A3LSWDI7110, A3LSCHI910, A3LWMG100, A3LSGHI907, A3LSCHI770, A3LSGHT339, A3LSGHT739, A3LSGHI750, A3LSGHT709, A3LSGHP200, PY7A3880001, PY7F3022017, PY7A3352021, PY7F3022019, PY7FD022015, PY7A3352031).

802.11b DSSS, 802.11g OFDM, and 802.11n OFDM modes, although the newer OFDM-based standards do generally seem to exhibit higher OOB Emissions than the older DSSS operations. While most testing only verified operation at the highest symbol rate (i.e. 11 Mbps for 802.11b and 56 Mbps for 802.11g) in Wi-Fi channel #1 as an assumed worst-case for lower band edge OOB Emissions compliance, the review uncovered several cases of devices that were reported to have significant OOB Emissions while operating at lower symbol rates or in higher channels (e.g., Nokia E51, E60, and E61i phones, IBM ThinkPad G40 Notebook PCs, and the Proxim Orinoco AP-700, 3Com WL537S, and Trapeze model 430 Wi-Fi access points).

Finally, it is important to note that significant and even worst-case OOB Emissions are not necessarily limited to the upper edge of the proposed band, but actually occur at many frequencies throughout the band. Examples of devices with substantial OOB Emissions at the middle and lower end of the AMT band are the IBM ThinkPad G40 and Samsung Q1 Notebook PCs and the 3Com WL537S, Aruba AP-70, Proxim Orinoco AP-700, Linksys WRT600N, and Meru RS-4000 and OAP-180 Wi-Fi access points. The prevalence of considerable OOB Emissions throughout the band is also clearly shown in the spectral plots provided in Exhibit C.

As devices incorporating Wi-Fi continue to proliferate, especially in portable and outdoor applications, and as the newer OFDM-based products replace the 802.11b devices still in use in many locations, the level of OOB Emissions into the band can only be expected to increase.

The ramifications of the data discussed herein are self-evident. The data shows that AMT is today coexisting with literally *millions* of uncontrolled devices that violate, by substantial margins, the protection criteria AFTRCC has put forth in this proceeding to argue against the proposed MBANS allocation. This data demonstrates conclusively the point GEHC raised months ago—that AFTRCC’s AMT protection criteria is excessive and unrealistically stringent, and that the claims and conclusions AFTRCC has made based on this criteria regarding MBANS interference to AMT are without merit.

Respectfully submitted,

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Exhibit A: Separation Distances Required for Part 15 Unlicensed Device OOB E to Satisfy ITU-R Recommendation M.1459 Power Flux Density Limit

	Part 15 spurious OOB E 2390-2400 MHz	Part 15 spurious OOB E 2360-2390 MHz (peak)	Part 15 spurious OOB E 2360-2390 MHz (ave)
Interference EIRP [dBm]	10.0	-21.3	-41.3
Interference EIRP [W]	1.00E-02	7.50E-06	7.50E-08
Separation Distance [km]	162.0	8.1	1.2
Path Loss Exponent	2.40	2.40	2.40
Power Flux Density at AMT Receiver [W/m²]	2.50E-16	2.49E-16	2.48E-16
Power Flux Density at AMT Receiver [dBW/m²]	-156.0	-156.0	-156.1
Power Flux Density at AMT Receiver [dBW/m²/4kHz]	-180.0	-180.0	-180.0
Interference Field Strength at AMT Receiver [uV/m]	0.3	0.3	0.3
Interference Field Strength at AMT Receiver [dBuV/m]	-10.3	-10.3	-10.3
AMT RX Antenna Gain [dBi]	30.00	30.00	30.00
Frequency [MHz]	2370.00	2370.00	2370.00
Received Power [W]	3.19E-16	3.17E-16	3.16E-16
Received Power [dBm]	-125.0	-125.0	-125.0
Interference Bandwidth [MHz]	1.000	1.000	1.000
Received Interference Power Spectral Density [dBm/Hz]	-185.0	-185.0	-185.0
AMT Receiver Noise Temp [K]	250.00	250.00	250.00
AMT Receiver Noise [dBm/Hz]	-174.6	-174.6	-174.6
Ratio of Received Interference to AMT Receiver Intrinsic Noise [dB]	-10.3	-10.4	-10.4
Comments	-20 dBc vs. fundamental per 47 CFR 15.247(d)	74 dBuV/m / 1MHz @ 3m peak per 47 CFR 15.209(a) and 15.35(b)	54 dBuV/m / 1MHz @ 3m average per 47 CFR 15.209(a)

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data

The following table contains selected radiated emissions measurements from compliance test data for a sampling of Part 15 unlicensed devices. This data was taken from the FCC's Equipment Authorization Search database. Measurements within 3 dB of the applicable maximum permitted limit are highlighted in orange and those within 1 dB of the applicable limit are highlighted in red.

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
O9C-AP3150	3Com	AP3150 802.11b/g Wi-Fi Access Point	2386.4	60.4	Peak	13.6	802.11b, channel 1, antenna 1
			2386.4	53.34	Ave	0.66	802.11b, channel 1, antenna 1
			2390	69.6	Peak	4.4	802.11g, channel 1, antenna 1
			2390	53.39	Ave	0.61	802.11g, channel 1, antenna 1
			2386.2	61.17	Peak	12.83	802.11b, channel 1, antenna 2
			2386.2	53.7	Ave	0.3	802.11b, channel 1, antenna 2
			2390	69.74	Peak	4.26	802.11g, channel 1, antenna 2
			2390	53.55	Ave	0.45	802.11g, channel 1, antenna 2
			2390	60	Peak	14	802.11b, channel 1, antenna 3
			2390	53.43	Ave	0.57	802.11b, channel 1, antenna 3
			2390	67.42	Peak	6.58	802.11g, channel 1, antenna 3
			2390	53.62	Ave	0.38	802.11g, channel 1, antenna 3
			2386.4	59.54	Peak	14.46	802.11b, channel 1, antenna 4
			2386.4	51.67	Ave	2.33	802.11b, channel 1, antenna 4
			2390	65.91	Peak	8.09	802.11g, channel 1, antenna 4
			2390	52.95	Ave	1.05	802.11g, channel 1, antenna 4
			2386.6	60.26	Peak	13.74	802.11b, channel 1, antenna 5
			2386.6	53.06	Ave	0.94	802.11b, channel 1, antenna 5
			2390	66.82	Peak	7.18	802.11g, channel 1, antenna 5
			2390	53.67	Ave	0.33	802.11g, channel 1, antenna 5
			2386.2	61.98	Peak	12.02	802.11b, channel 1, antenna 6
			2386.6	53.5	Ave	0.5	802.11b, channel 1, antenna 6
			2390	68.4	Peak	5.6	802.11g, channel 1, antenna 6
			2390	53.57	Ave	0.43	802.11g, channel 1, antenna 6
O9C-AP3950	3Com	AP3950 802.11n Wi-Fi Access Point	2389.93	73.64	Peak	0.36	802.11n, 20MHz channel 1
			2389.93	52.4	Ave	1.6	802.11n, 20MHz channel 1
			2389.84	72.93	Peak	1.07	802.11n, 20MHz channel 6
			2390	53.57	Ave	0.43	802.11n, 20MHz channel 6
			2889.96	71.36	Peak	2.64	802.11n, 40MHz channel 1
			2390	53.92	Ave	0.08	802.11n, 40MHz channel 1
			2390	65.85	Peak	8.15	802.11n, 40MHz channel 6
			2390	53.39	Ave	0.61	802.11n, 40MHz channel 6
			2390	61.96	Peak	12.04	802.11n, 40MHz channel 9
			2390	50.8	Ave	3.2	802.11n, 40MHz channel 9
			2386.12	67.48	Peak	6.52	802.11b, channel 1
			2386.36	52.07	Ave	1.93	802.11b, channel 1
			2389.46	59.99	Peak	14.01	802.11g, channel 1
			2390	53.28	Ave	0.72	802.11g, channel 1
O9C-WL537S	3Com	WL537S 108Mbps 802.11b/g Wi-Fi Router	2390	49.05	Ave	4.95	802.11b, channel 1, hoz pol
			2360	50.88	Ave	3.12	802.11b, channel 1, vert pol
			2390	49.59	Ave	4.41	802.11b, channel 1, vert pol
			2360	49.23	Ave	4.77	802.11b, channel 6, vert pol
			2360	50.19	Ave	3.81	802.11b, channel 11, vert pol
			2390	49.92	Ave	4.08	802.11g, channel 1, horz pol
			2360	49.61	Ave	4.39	802.11g, channel 1, vert pol
			2390	52.46	Ave	1.54	802.11g, channel 1, vert pol
			2360	52.28	Ave	1.72	802.11g, channel 6, vert pol
			2360	48.41	Ave	5.59	802.11g, channel 11, vert pol
			2390	48.31	Ave	5.69	802.11g "turbo", channel 6, horz pol
			2390	49.68	Ave	4.32	802.11g "turbo", channel 6, vert pol
BCGA1288	Apple	iPod Touch with 802.11b/g Wi-Fi	2389.6	70.44	Peak	3.56	802.11g, channel 1, horz pol
			2390	53.08	Ave	0.92	802.11g, channel 1, horz pol
			2390	70.55	Peak	3.45	802.11g, channel 1, vert pol
			2390	52.07	Ave	1.93	802.11g, channel 1, vert pol
BCGA1203	Apple	iPhone with 802.11b/g Wi-Fi	2387.6	50.41	Ave	3.59	802.11b, channel 1
			2388.57	67.14	Peak	6.86	802.11g, channel 1
			2389.8	51.42	Ave	2.58	802.11g, channel 1

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
(continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
Q9D AP6061SDR	Aruba	AP-60, AP-61 802.11b/g Wi-Fi Access Point	2390	63.5	Peak	10.5	802.11b, channel 1, integral antenna
			2390	49.45	Ave	4.55	802.11b, channel 1, integral antenna
			2390	69.77	Peak	4.23	802.11g, channel 1, integral antenna
			2390	52.9	Ave	1.1	802.11g, channel 1, integral antenna
			2390	63.34	Peak	10.66	802.11b, channel 1, 6dBi antenna-2
			2390	50.02	Ave	3.98	802.11b, channel 1, 6dBi antenna-2
			2390	68.81	Peak	5.19	802.11g, channel 1, 6dBi antenna-2
			2390	52.35	Ave	1.65	802.11g, channel 1, 6dBi antenna-2
			2390	68.79	Peak	5.21	802.11b, channel 1, 12dB antenna-7
			2390	51.88	Ave	2.12	802.11b, channel 1, 12dB antenna-7
			2390	68.94	Peak	5.06	802.11g, channel 1, 12dB antenna-7
			2390	51.12	Ave	2.88	802.11g, channel 1, 12dB antenna-7
Q9DAP70SDR	Aruba	AP-70 802.11b/g Wi-Fi Access Point	2390	62.34	Peak	11.66	802.11b, channel 1, integral antenna
			2390	49.7	Ave	4.3	802.11b, channel 1, integral antenna
			2390	64.35	Peak	9.65	802.11g, channel 1, integral antenna
			2390	47.31	Ave	6.69	802.11g, channel 1, integral antenna
			2390	62.88	Peak	11.12	802.11b, channel 1, 6dBi antenna-2
			2390	50.19	Ave	3.81	802.11b, channel 1, 6dBi antenna-2
			2390	72.12	Peak	1.88	802.11g, channel 1, 6dBi antenna-2
			2390	52.28	Ave	1.72	802.11g, channel 1, 6dBi antenna-2
			2390	73.3	Peak	0.7	802.11b, channel 1, 12dB antenna-7
			2390	50.62	Ave	3.38	802.11b, channel 1, 12dB antenna-7
			2390	68.94	Peak	5.06	802.11g, channel 1, 12dB antenna-7
			2390	51.12	Ave	2.88	802.11g, channel 1, 12dB antenna-7
Q9D AP120121SDR	Aruba	AP-120 802.11n Wi-Fi Access Point	2390	61.22	Peak	12.78	802.11b, channel 1, integral ant, ART Setting = 17.5
			2390	52.54	Ave	1.46	802.11b, channel 1, integral ant, ART Setting = 17.5
			2390	73.19	Peak	0.81	802.11g, channel 1, integral ant, ART Setting = 13.5
			2390	52.92	Ave	1.08	802.11g, channel 1, integral ant, ART Setting = 13.5
			2390	73.37	Peak	0.63	802.11n HT-20, channel 1, integral ant, ART Setting = 12
			2390	51.59	Ave	2.41	802.11n HT-20, channel 1, integral ant, ART Setting = 12
			2390	72.09	Peak	1.91	802.11n HT-40, channel 1, integral ant, ART Setting = 9.5
			2390	53.08	Ave	0.92	802.11n HT-40, channel 1, integral ant, ART Setting = 9.5
			2390	62.3	Peak	11.7	802.11b, channel 1, 12dB ant-7, ART Setting = 16
			2390	52.36	Ave	1.64	802.11b, channel 1, 12dB ant-7, ART Setting = 16
			2390	71	Peak	3	802.11g, channel 1, 12dB ant-7, ART Setting = 11
			2390	52.7	Ave	1.3	802.11g, channel 1, 12dB ant-7, ART Setting = 11
			2390	69.76	Peak	4.24	802.11n HT-20, channel 1, 12dB ant-7, ART Setting = 6.5
			2390	52.53	Ave	1.47	802.11n HT-20, channel 1, 12dB ant-7, ART Setting = 6.5
			2390	71.86	Peak	2.14	802.11n HT-40, channel 1, 12dB ant-7, ART Setting = 6.5
			2390	52.86	Ave	1.14	802.11n HT-40, channel 1, 12dB ant-7, ART Setting = 6.5
			2390	56.65	Peak	17.35	802.11b, channel 1, 5dBi ant-8, ART Setting = 19
			2390	52.18	Ave	1.82	802.11b, channel 1, 5dBi ant-8, ART Setting = 19
			2390	68.5	Peak	5.5	802.11g, channel 1, 5dBi ant-8, ART Setting = 17
			2390	50.2	Ave	3.8	802.11g, channel 1, 5dBi ant-8, ART Setting = 17
			2390	69.52	Peak	4.48	802.11n HT-20, channel 1, 5dBi ant-8, ART Setting = 17
			2390	51.76	Ave	2.24	802.11n HT-20, channel 1, 5dBi ant-8, ART Setting = 17
			2390	71.61	Peak	2.39	802.11n HT-40, channel 1, 5dBi ant-8, ART Setting = 15
			2390	52.12	Ave	1.88	802.11n HT-40, channel 1, 5dBi ant-8, ART Setting = 15

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
(continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments	
MSQ F94965AGN	Asustek	F9S, F9E, F9D Notebook PCs with integrated 802.11n Wi-Fi	2389.75	67.626	Peak	6.374	Mode 3: 802.11g (2412MHz) (Ch.A), horz pol	
			2389.75	49.923	Ave	4.077	Mode 3: 802.11g (2412MHz) (Ch.A), horz pol	
			2389.5	67.252	Peak	6.748	Mode 3: 802.11g (2412MHz) (Ch.A), vert pol	
			2389.5	48.603	Ave	5.397	Mode 3: 802.11g (2412MHz) (Ch.A), vert pol	
			2389.75	68.257	Peak	5.743	Mode 3: 802.11g (2412MHz) (Ch.B), horz pol	
			2389.75	49.034	Ave	4.966	Mode 3: 802.11g (2412MHz) (Ch.B), horz pol	
			2389.75	69.718	Peak	4.282	Mode 3: 802.11g (2412MHz) (Ch.B), vert pol	
			2389.75	50.157	Ave	3.843	Mode 3: 802.11g (2412MHz) (Ch.B), vert pol	
			2389.625	69.482	Peak	4.518	Mode 4: 802.11n(20M) (2412MHz) (Ch.A), horz pol	
			2389.625	49.99	Ave	4.01	Mode 4: 802.11n(20M) (2412MHz) (Ch.A), horz pol	
			2389.5	69.028	Peak	4.972	Mode 4: 802.11n(20M) (2412MHz) (Ch.A), vert pol	
			2389.5	49.736	Ave	4.264	Mode 4: 802.11n(20M) (2412MHz) (Ch.A), vert pol	
			2389.75	69.575	Peak	4.425	Mode 4: 802.11n(20M) (2412MHz) (Ch.B), horz pol	
			2389.75	48.584	Ave	5.416	Mode 4: 802.11n(20M) (2412MHz) (Ch.B), horz pol	
			2389.625	70.774	Peak	3.226	Mode 4: 802.11n(20M) (2412MHz) (Ch.B), vert pol	
			2389.625	50.22	Ave	3.78	Mode 4: 802.11n(20M) (2412MHz) (Ch.B), vert pol	
			2389.125	69.324	Peak	4.676	Mode 4: 802.11n(20M) (2412MHz) (Ch.A+Ch.B), horz pol	
			2389.125	50.873	Ave	3.127	Mode 4: 802.11n(20M) (2412MHz) (Ch.A+Ch.B), horz pol	
			2389.375	71.398	Peak	2.602	Mode 4: 802.11n(20M) (2412MHz) (Ch.A+Ch.B), vert pol	
			2389.375	52.438	Ave	1.562	Mode 4: 802.11n(20M) (2412MHz) (Ch.A+Ch.B), vert pol	
MSQR1E	Asustek	R1E Notebook PC with integrated 802.11n Wi-Fi	2389.625	66.946	Peak	7.054	Mode 3: 802.11g (2412MHz) (Antenna A), horz pol	
			2389.625	49.216	Ave	4.784	Mode 3: 802.11g (2412MHz) (Antenna A), horz pol	
			2389.125	68.418	Peak	5.582	Mode 3: 802.11g (2412MHz) (Antenna A), vert pol	
			2389.125	49.355	Ave	4.645	Mode 3: 802.11g (2412MHz) (Antenna A), vert pol	
			2389.625	71.398	Peak	2.602	Mode 3: 802.11g (2412MHz) (Antenna B), horz pol	
			2389.625	51.786	Ave	2.214	Mode 3: 802.11g (2412MHz) (Antenna B), horz pol	
			2389.75	70.287	Peak	3.713	Mode 3: 802.11g (2412MHz) (Antenna B), vert pol	
			2389.75	51.749	Ave	2.251	Mode 3: 802.11g (2412MHz) (Antenna B), vert pol	
			2388.375	71.398	Peak	2.602	Mode 4: 802.11n(20M) (2412MHz) (Antenna A), horz pol	
			2388.375	52.438	Ave	1.562	Mode 4: 802.11n(20M) (2412MHz) (Antenna A), horz pol	
			2389.5	71.063	Peak	2.937	Mode 4: 802.11n(20M) (2412MHz) (Antenna A), vert pol	
			2389.5	51.04	Ave	2.96	Mode 4: 802.11n(20M) (2412MHz) (Antenna A), vert pol	
			2389.125	69.94	Peak	4.06	Mode 4: 802.11n(20M) (2412MHz) (Antenna B), horz pol	
			2389.125	50.632	Ave	3.368	Mode 4: 802.11n(20M) (2412MHz) (Antenna B), horz pol	
			2389.125	69.812	Peak	4.188	Mode 4: 802.11n(20M) (2412MHz) (Antenna B), vert pol	
			2389.125	48.286	Ave	5.714	Mode 4: 802.11n(20M) (2412MHz) (Antenna B), vert pol	
QDS- BRCM1020	Broadcom	802.11 b/g Wi-Fi module for notebook PCs, etc. (e.g. Dell D620)	2389.87	68.17	Peak	5.83	802.11g, channel 1, 18 dBm, vert pol	
			2389.87	53.95	Ave	0.05	802.11g, channel 1, 18 dBm, vert pol	
			2389.47	70.81	Peak	3.19	802.11g, channel 1, 19 dBm, vert pol	
			2390	53.83	Ave	0.17	802.11g, channel 1, 19 dBm, vert pol	
			2389.97	50.8	Ave	3.2	802.11g, channel 1, 10 dBi yagi, vert pol	
LDK102055, LDK102056	Cisco	AIR-AP1242 802.11b/g Access Point	2389.97	44.9	Ave	9.1	802.11g, channel 1, 10 dBi yagi, horz pol	
			2389.97	71.5	Peak	2.5	802.11g, channel 1, 10 dBi yagi, horz pol	
LDK102069, LDK102070	Cisco	AIR-AP1141 / 1142 802.11n Access Points	2389.98	61.8	Peak	12.2	802.11g, channel 1, 10 dBi yagi, horz pol	
			2386.6	52.6	Ave	1.4	2412 MHz, 11 Mbps, Legacy CCK, Single Paths	
			2386.6	53.44	Ave	0.56	2412 MHz, 11 Mbps, Legacy CCK, Dual Paths	
			2390	54	Ave	0	2412 MHz, 54 Mbps, Non HT-20, Single Transmit Paths	
			2390	53.31	Ave	0.69	2412 MHz, 54 Mbps, Non HT-20, Dual Paths	
			2390	53.61	Ave	0.39	2412/2432 MHz, 54 Mbps, Non HT-20 Beam Forming	
			2390	51.38	Ave	2.62	2412/2432 MHz, 54 Mbps, Non HT-40 Dup, Single Paths	
			2390	51.45	Ave	2.55	2412/2432 MHz, 54 Mbps, Non HT-40 Dup, Dual Paths	
			2390	53.34	Ave	0.66	2412/2432 MHz, M7, HT-40, Single Paths	
			2390	52.7	Ave	1.3	2412/2432 MHz, M7, HT-40, Dual Paths	
			2387.4	62.45	Peak	11.55	2412 MHz, 11 Mbps, Legacy CCK, Single Paths	
			2386.8	62.62	Peak	11.38	2412 MHz, 11 Mbps, Legacy CCK, Dual Paths	
			2390	69.07	Peak	4.93	2412 MHz, 54 Mbps, Non HT-20, Single Paths	
			2389.5	69.56	Peak	4.44	2412 MHz, 54 Mbps, Non HT-20, Dual Paths	
			2389.9	67.04	Peak	6.96	2412 MHz, 54 Mbps, Non HT-20 Beam Forming, Dual Paths	
			2390	67.47	Peak	6.53	2412/2432 MHz, 54 Mbps, Non HT-40 Dup, Single Paths	
			2389.2	73.58	Peak	0.42	2412/2432 MHz, 54 Mbps, Non HT-40 Dupl, Dual Paths	
			2389.7	71.58	Peak	2.42	2412/2432 MHz, M7, HT-40, Single Paths	
			2389.5	70.24	Peak	3.76	2412/2432 MHz, M7, HT-40, Dual Paths	

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
(continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
LDK102058	Cisco	Aironet LAP1510 802.11b/g outdoor Access Point	2390	53.65	Ave	0.35	802.11b, channel 1, 8 dBi antenna
			2390	63.69	Peak	10.31	802.11b, channel 1, 8 dBi antenna
			2390	53.65	Ave	0.35	802.11g, channel 1, 8 dBi antenna
			2390	72.78	Peak	1.22	802.11g, channel 1, 8 dBi antenna
			2385.9	53.35	Ave	0.65	802.11b, channel 1, 5.5 dBi antenna
			2385.9	66.74	Peak	7.26	802.11b, channel 1, 5.5 dBi antenna
			2390	53.89	Ave	0.11	802.11g, channel 1, 5.5 dBi antenna
LDK102060	Cisco	Cisco Aironet 1250AG Series Access Point	2390	70.77	Peak	3.23	802.11g, channel 1, 5.5 dBi antenna
			2390	48.6	Ave	5.4	802.11b, channel 1, 5.2 dBi ant, vert pol
			2390	48.5	Ave	5.5	802.11b, channel 1, 5.2 dBi ant, horz pol
			2390	49.2	Ave	4.8	802.11g, channel 1, 5.2 dBi antenna, vert pol
			2390	48.5	Ave	5.5	802.11g, channel 1, 5.2 dBi antenna, horz pol
			2390	49.5	Ave	4.5	802.11b, channel 1, 9.0 dBi antenna, vert pol
			2390	48.7	Ave	5.3	802.11b, channel 1, 9.0 dBi antenna, horz pol
			2390	51.5	Ave	2.5	802.11g, channel 1, 9.0 dBi antenna, vert pol
			2390	48.7	Ave	5.3	802.11g, channel 1, 9.0 dBi antenna, horz pol
			2390	72.2	Peak	1.8	802.11g, channel 1, 9.0 dBi antenna, horz pol
			2390	49.8	Ave	4.2	802.11b, channel 1, 10.0 dBi antenna, vert pol
			2390	48.9	Ave	5.1	802.11b, channel 1, 10.0 dBi antenna, horz pol
			2390	51.8	Ave	2.2	802.11g, channel 1, 10.0 dBi antenna, vert pol
			2390	49.5	Ave	4.5	802.11g, channel 1, 10.0 dBi antenna, horz pol
LDK7900001	Cisco	Cisco CP7921G Unified Wireless IP Phone	2390	73.7	Peak	0.3	802.11g, channel 1, 10.0 dBi antenna, horz pol
			2390	48.9	Ave	5.1	802.11b, channel 1, vert pol
			2390	48.9	Ave	5.1	802.11b, channel 1, horz pol
			2390	69.6	Peak	4.4	802.11g, channel 1, horz pol
			2390	65.9	Peak	8.1	802.11g, channel 1, vert pol
			2386.93	64.6	Peak	9.4	802.11g, channel 1, horz pol
			2390	48.7	Ave	5.3	802.11g, channel 1, vert pol
KA2DIR825A1	D Link	DIR 825 802.11n Wi-Fi Router	2390	48.4	Ave	5.6	802.11g, channel 1, horz pol
			2390	47.48	Ave	6.52	802.11b, channel 1, vert pol
			2390	68.16	Peak	5.84	802.11g, channel 1, vert pol
			2390	51.14	Ave	2.86	802.11g, channel 1, vert pol
			2390	72.88	Peak	1.12	802.11n (20 MHz), channel 1, vert pol
			2390	50.03	Ave	1.97	802.11n (20 MHz), channel 1, vert pol
			2382	65.74	Peak	8.26	802.11n (40 MHz), channel 1, vert pol
			2382	52.74	Ave	1.26	802.11n (40 MHz), channel 1, vert pol
			2390	64.93	Peak	9.07	802.11n (40 MHz), channel 1, vert pol
			2390	50.44	Ave	3.56	802.11n (40 MHz), channel 1, vert pol
			2390	64.87	Peak	9.13	802.11n (40 MHz), channel 4, vert pol
			2390	50.61	Ave	3.39	802.11n (40 MHz), channel 4, vert pol
KA2AP2553A1	D Link	DAP-2533 802.11n Wi-Fi Access Point	2385.82	64.02	Peak	9.98	802.11b, channel 1, vert pol
			2386.97	52.14	Ave	1.86	802.11b, channel 1, vert pol
			2390	71.3	Peak	2.7	802.11g, channel 1, vert pol
			2390	51.4	Ave	2.6	802.11g, channel 1, vert pol
			2389.31	72.39	Peak	1.61	802.11n, HT20, channel 1, vert pol
			2389.31	51.53	Ave	2.47	802.11n, HT20, channel 1, vert pol
			2389.32	72.25	Peak	1.75	802.11n, HT40, channel 1, vert pol
			2389.54	52.84	Ave	1.16	802.11n, HT40, channel 1, vert pol
			2379.14	70.87	Peak	3.13	802.11b, channel 1, internal 9dBi ant, vert pol
			2387.43	50.64	Ave	3.36	802.11b, channel 1, internal 9dBi ant, vert pol
KA2AP3220A1	D Link	DAP-3220 802.11n Wi-Fi Access Point	2390	72.78	Peak	1.22	802.11g, channel 1, internal 9dBi ant, vert pol
			2390	51.71	Ave	2.29	802.11g, channel 1, internal 9dBi ant, vert pol
			2389.7	67.81	Peak	6.19	802.11g "turbo", channel 1, internal 9dBi ant, vert pol
			2390	52.22	Ave	1.78	802.11g "turbo", channel 1, internal 9dBi ant, vert pol
			2387	69.38	Peak	4.62	802.11b, channel 1, external 8.5dBi ant, vert pol
			2387	50.95	Ave	3.05	802.11b, channel 1, external 8.5dBi ant, vert pol
			2390	71.42	Peak	2.58	802.11g, channel 1, external 8.5dBi ant, vert pol
			2390	52.27	Ave	1.73	802.11g, channel 1, external 8.5dBi ant, vert pol
			2389.7	66.73	Peak	7.27	802.11g "turbo", channel 1, external 8.5dBi ant, vert pol
			2390	51.43	Ave	2.57	802.11g "turbo", channel 1, external 8.5dBi ant, vert pol

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
 (continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
E2K24GBRL	Dell	Notebook PC with integrated 802.11b/g Wi-Fi	2385.2	48.08	Ave	5.92	802.11b, channel 1, horz pol
			2385.2	50.88	Ave	3.12	802.11b, channel 1, horz pol
			2390	66.58	Peak	7.42	802.11g, channel 1, vert pol
			2390	50.91	Ave	3.09	802.11g, channel 1, horz pol
			2390	68.21	Peak	5.79	802.11g, channel 1, vert pol
			2390	52.54	Ave	1.46	802.11g, channel 1, vert pol
			2385.2	52.87	Ave	1.13	802.11b, channel 1, horz pol
			2390	68.21	Peak	5.79	802.11g, channel 1, vert pol
			2390	52.37	Ave	1.63	802.11g, channel 1, vert pol
			2368	51.3	Ave	2.7	802.11g, channel 1, horz pol
ANO 20020306A1L	IBM	ThinkPad G40 2387, 2388, 2389 notebook	2388	52	Ave	2	802.11g, channel 1, horz pol
			2368	53.1	Ave	0.9	802.11g, channel 6, horz pol
ANO 20020302R1L	IBM	ThinkPad G40 2373, 2374, 2375, 2376 notebook PCs	2368	47.8	Ave	6.2	802.11g, channel 1, horz pol
			2389	52.5	Ave	1.5	802.11g, channel 1, horz pol
			2367	49.5	Ave	4.5	802.11g, channel 6, horz pol
			2369	47.7	Ave	6.3	802.11g, channel 11, horz pol
WRT600NV11	Linksys	WRT600N 802.11n Wi-Fi Access Point	2388.5972	60.63	Peak	13.37	802.11b, 2412 MHz, pwr setting 0x40xx, vert pol
			2389.1984	52.29	Ave	1.71	802.11b, 2412 MHz, pwr setting 0x40xx, vert pol
			2389.8998	72.7	Peak	1.3	802.11g, 2412MHz, pwr setting 0x3Axx, vert pol
			2390000	53.34	Ave	0.66	802.11g, 2412MHz, pwr setting 0x3Axx, vert pol
			2387.996	71.64	Peak	2.36	802.11g, 2417MHz, pwr setting 0x3xxx, vert pol
			2390000	53.92	Ave	0.08	802.11g, 2417MHz, pwr setting 0x3xxx, vert pol
			2390.2004	71.25	Peak	2.75	802.11 SISO, 2422MHz, pwr setting 0x43xx, vert pol
			2390000	53.56	Ave	0.44	802.11 SISO, 2422MHz, pwr setting 0x43xx, vert pol
			2389.5992	72.64	Peak	1.36	802.11 SISO, 2427MHz, pwr setting 0x41xx, vert pol
			2390000	53.84	Ave	0.16	802.11 SISO, 2427MHz, pwr setting 0x41xx, vert pol
			2388.998	68.64	Peak	5.36	802.11 SISO, 2437MHz, pwr setting 0x3dxx, vert pol
			2390000	53.32	Ave	0.68	802.11 SISO, 2437MHz, pwr setting 0x3dxx, vert pol
			2390000	71.16	Peak	2.84	802.11n 40MHz, 2422MHz, pwr setting 0x3f3d, vert pol
			2389.5992	53.8	Ave	0.2	802.11n 40MHz, 2422MHz, pwr setting 0x3f3d, vert pol
			2389.3988	71.55	Peak	2.45	802.11n 40MHz, 2427MHz, pwr setting 0x3e3d, vert pol
			2389.5992	53.63	Ave	0.37	802.11n 40MHz, 2427MHz, pwr setting 0x3e3d, vert pol
			2390000	70.93	Peak	3.07	802.11n 20MHz, 2412MHz, pwr setting 0x433e, vert pol
			2388.5972	53.92	Ave	0.08	802.11n 20MHz, 2412MHz, pwr setting 0x433e, vert pol
			2389.1984	69.57	Peak	4.43	802.11n 20MHz, 2417MHz, pwr setting 0x3f3a, vert pol
			2388.998	53.45	Ave	0.55	802.11n 20MHz, 2417MHz, pwr setting 0x3f3a, vert pol
RE7-AP100	Meru	AP-100 802.11b Wi-Fi Access	2390	68.8	Peak	5.2	802.11b, channel 1, MBF24008 Omni 8dBi ant, vert pol
			2390	69.3	Peak	4.7	802.11b, channel 1, MP24015PTNF Panel ant, vert pol
RE7-AP150R2	Meru	AP-150 802.11b/g Wi-Fi Access Point	2378.4	65.94	Peak	8.06	802.11b, channel 1
			2386	53.25	Ave	0.75	802.11b, channel 1
			2389.8	69.66	Peak	4.34	802.11g, channel 1
			2390	53.82	Ave	0.18	802.11g, channel 1
			2390	71.2	Peak	2.8	802.11g Turbo, channel 6
			2390	53.7	Ave	0.3	802.11g Turbo, channel 6
RE7-AP300	Meru	AP-300 802.11b/g/n Wi-Fi Access Point	2387.33	68.54	Peak	5.46	Mode 4 802.11g chan 1, vert pol
			2390	46.84	Ave	7.16	Mode 13 802.11n 40M chan 3, vert pol
			2390	68.15	Peak	5.85	Mode 13 802.11n 40M chan 3, vert pol
			2388.85	68.96	Peak	5.04	Mode 20 802.11n 40M chan 3, vert pol
			2388.85	47.11	Ave	6.89	Mode 20 802.11n 40M chan 3, vert pol
			2387.33	66.06	Peak	7.94	Mode 22 802.11n 20M chan 11 + 40M chan 3, horz pol
			2387.33	46.41	Ave	7.59	Mode 22 802.11n 20M chan 11 + 40M chan 3, horz pol
			2386.38	70.56	Peak	3.44	Mode 22 802.11n 20M chan 11 + 40M chan 3, vert pol
			2386.38	51.46	Ave	2.54	Mode 22 802.11n 20M chan 11 + 40M chan 3, vert pol

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
 (continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
RE7-RS4000	Meru	RS-4000 802.11b/g "Radio Switch" multi-channel Wi-Fi Access Point	2362	53	Ave	1	802.11b channel 1 & channel 11, antenna #1, vert pol
			2362	52.3	Ave	1.7	802.11b channel 1 & channel 11, antenna #1, horz pol
			2362	65.9	Peak	8.1	802.11b channel 1 & channel 11, antenna #1, vert pol
			2362	64.1	Peak	9.9	802.11b channel 1 & channel 11, antenna #1, horz pol
			2362	53.2	Ave	0.8	802.11b channel 1 & channel 11, antenna #2, vert pol
			2362	51.9	Ave	2.1	802.11b channel 1 & channel 11, antenna #2, horz pol
			2362	66.1	Peak	7.9	802.11b channel 1 & channel 11, antenna #2, vert pol
			2362	64.3	Peak	9.7	802.11b channel 1 & channel 11, antenna #2, horz pol
			2377	52.2	Ave	1.8	802.11g channel 2 & channel 10, antenna #1, horz pol
			2377	51	Ave	3	802.11g channel 2 & channel 10, antenna #1, vert pol
			2377	63.9	Peak	10.1	802.11g channel 2 & channel 10, antenna #1, horz pol
			2377	63.5	Peak	10.5	802.11g channel 2 & channel 10, antenna #1, vert pol
			2377	52.4	Ave	1.6	802.11g channel 2 & channel 10, antenna #2, horz pol
			2377	51.2	Ave	2.8	802.11g channel 2 & channel 10, antenna #2, vert pol
			2377	64.1	Peak	9.9	802.11g channel 2 & channel 10, antenna #2, horz pol
			2377	63.7	Peak	10.3	802.11g channel 2 & channel 10, antenna #2, vert pol
RE7-AP200	Meru	OAP-200 802.11b/g Wi-Fi Access Point	2390	52.5	Ave	1.5	802.11b, channel 1, vert pol
			2390	52.1	Ave	1.9	802.11g, channel 1, vert pol
			2390	64.7	Peak	9.3	802.11g, channel 1, vert pol
RE7-OAP180	Meru	OAP-180 802.11b/g Outdoor Wi-Fi Access Point	2385.6	51.2	Ave	2.8	802.11b channel 1, antenna 1/2
			2390	52	Ave	2	802.11g channel 1, antenna 1/2
			2390	66.39	Peak	7.61	802.11g channel 1, antenna 1/2
			2390	51.35	Ave	2.65	802.11g turbo channel 6, antenna 1/2
			2390	64.57	Peak	9.43	802.11g turbo channel 6, antenna 1/2
			2385.8	50.79	Ave	3.21	802.11b channel 1, antenna 3
			2390	52.86	Ave	1.14	802.11g channel 1, antenna 3
			2390	69.05	Peak	4.95	802.11g channel 1, antenna 3
			2390	50.95	Ave	3.05	802.11g turbo channel 6, antenna 3
			2390	63.55	Peak	10.45	802.11g turbo channel 6, antenna 3
			2385.4	53.29	Ave	0.71	802.11b channel 1, antenna 4
			2390	52	Ave	2	802.11g channel 1, antenna 4
			2390	66.87	Peak	7.13	802.11g channel 1, antenna 4
			2390	50.31	Ave	3.69	802.11g turbo channel 6, antenna 4
			2390	64.45	Peak	9.55	802.11g turbo channel 6, antenna 4
			2385.6	53.67	Ave	0.33	802.11b channel 1, antenna 5
			2390	53.42	Ave	0.58	802.11g channel 1, antenna 5
			2390	67.8	Peak	6.2	802.11g channel 1, antenna 5
			2390	53.84	Ave	0.16	802.11g turbo channel 6, antenna 5
			2390	67.05	Peak	6.95	802.11g turbo channel 6, antenna 5
IHDT6EY1	Motorola	FOMA M1000 802.11b Wi-Fi enabled smartphone	2387.224	49.9	Ave	4.1	802.11b, channel 1, vert pol.
IHDP56HH1, IHDP56HH2	Motorola	Z6W BC60 802.11b/g Wi-Fi enabled phone	2389.9	49.46	Ave	4.54	802.11g, channel 1, horz pol.
IHDP56JK1	Motorola	802.11b/g Wi-Fi enabled phone	2390	46.44	Ave	7.56	802.11g, channel 1, horz pol.
PYARM-89	Nokia	E61 RM-89 Wi-Fi Enabled	2390	69.94	Peak	4.06	802.11b, 11 Mbps symbol rate, channel 1
PYARM-244	Nokia	E51 RM-244 Wi-Fi Enabled	2390	71.32	Peak	2.68	802.11g, 48 Mbps symbol rate, channel 1
PYARM-294	Nokia	E61i RM-294 Wi-Fi Enabled	2390	64.94	Peak	9.06	802.11g, 6 Mbps symbol rate, channel 1
PYARM-294	Nokia	E61i RM-294 Wi-Fi Enabled	2390	49.44	Ave	4.56	802.11g, 6 Mbps symbol rate, channel 1
PYARM-49	Nokia	E60 RM-49 Wi-Fi Enabled smartphone	2390	67.29	Peak	6.71	802.11b, 11 Mbps symbol rate, channel 1
PYARM-49	Nokia	E60 RM-49 Wi-Fi Enabled smartphone	2390	68.12	Peak	5.88	802.11g, 6 Mbps symbol rate, channel 1
O8F-SKYG	Palm	Treo Pro Wi-Fi Enabled smartphone	2389.99	61.96	Peak	12.04	802.11b, channel 1, horz pol
O8F-SKYG	Palm	Treo Pro Wi-Fi Enabled smartphone	2389.99	52.43	Ave	1.57	802.11b, channel 1, horz pol
O8F-SKYG	Palm	Treo Pro Wi-Fi Enabled smartphone	2390	72.44	Peak	1.56	802.11g, channel 1, horz pol
O8F-SKYG	Palm	Treo Pro Wi-Fi Enabled smartphone	2390	47.84	Ave	6.16	802.11g, channel 1, horz pol

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
 (continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments	
HZB-8460	Proxim	8480-US PC card 802.11b/g Wi-Fi adaptor	2390	63.7	Peak	10.3	802.11b, channel 1	
			2390	52.7	Ave	1.3	802.11b, channel 1	
			2390	69.9	Peak	4.1	802.11g, channel 1	
			2390	53.2	Ave	0.8	802.11g, channel 1	
			2380	64.4	Peak	9.6	802.11g, channel 1	
			2380	51.6	Ave	2.4	802.11g, channel 1	
HZB-AP700	Proxim	ORINOCO AP-700 802.11b/g Access Point	2360	49.2	Ave	4.8	802.11b, channel 1, antenna 1, vert pol	
			2390	52	Ave	2	802.11b, channel 1, antenna 1, vert pol	
			2360	41.9	Ave	12.1	802.11b, channel 6 , antenna 1, horz pol	
			2360	50	Ave	4	802.11b, channel 6 , antenna 1, vert pol	
			2360	43.8	Ave	10.2	802.11b, channel 1, antenna 2, horz pol	
			2387	46.2	Ave	7.8	802.11b, channel 1, antenna 2, horz pol	
			2390	47.2	Ave	6.8	802.11b, channel 1, antenna 2, horz pol	
			2360	50.6	Ave	3.4	802.11b, channel 1, antenna 2, vert pol	
			2387	49.1	Ave	4.9	802.11b, channel 1, antenna 2, vert pol	
			2390	51	Ave	3	802.11b, channel 1, antenna 2, vert pol	
			2360	44	Ave	10	802.11b, channel 6 , antenna 2, horz pol	
			2360	49.1	Ave	4.9	802.11b, channel 6 , antenna 2, vert pol	
			2390	47.2	Ave	6.8	802.11b, channel 6 , antenna 2, vert pol	
			2360	43.2	Ave	10.8	802.11b, channel 11 , antenna 2, horz pol	
			2390	47.2	Ave	6.8	802.11b, channel 6 , antenna 3, vert pol	
			2390	45.7	Ave	8.3	802.11b, channel 1, antenna 4, horz pol	
			2360	45.4	Ave	8.6	802.11b, channel 1, antenna 4, vert pol	
			2390	52.4	Ave	1.6	802.11b, channel 1, antenna 4, vert pol	
			2356	47.4	Ave	6.6	802.11b, channel 6 , antenna 4, vert pol	
			2360	49.2	Ave	4.8	802.11b, channel 6 , antenna 4, vert pol	
			2390	51.1	Ave	2.9	802.11b, channel 6 , antenna 4, vert pol	
			2360	43.4	Ave	10.6	802.11b, channel 11 , antenna 4, vert pol	
			2360	49	Ave	5	802.11b, channel 1, antenna 5, vert pol	
			2390	51.4	Ave	2.6	802.11b, channel 1, antenna 5, vert pol	
			2360	51.3	Ave	2.7	802.11b, channel 6 , antenna 5, vert pol	
			2390	63.3	Peak	10.7	802.11b, channel 6 , antenna 5, vert pol	
			2390	52.3	Ave	1.7	802.11b, channel 6 , antenna 5, vert pol	
			2360	63.1	Peak	10.9	802.11b, channel 11 , antenna 5, vert pol	
			2360	52.8	Ave	1.2	802.11b, channel 11 , antenna 5, vert pol	
			2378	64.2	Peak	9.8	802.11b, channel 11 , antenna 5, vert pol	
			2378	53.2	Ave	0.8	802.11b, channel 11 , antenna 5, vert pol	
			2360	47.1	Ave	6.9	802.11b, channel 1, antenna 6, vert pol	
			2387	49.7	Ave	4.3	802.11b, channel 1, antenna 6, vert pol	
			2390	52	Ave	2	802.11b, channel 1, antenna 6, vert pol	
			2360	50.8	Ave	3.2	802.11b, channel 6 , antenna 6, vert pol	
			2390	48.2	Ave	5.8	802.11b, channel 6 , antenna 6, vert pol	
			2360	50.6	Ave	3.4	802.11b, channel 11 , antenna 6, vert pol	
			2360	51	Ave	3	802.11b, channel 3 , antenna 7, vert pol	
			2390	52.1	Ave	1.9	802.11b, channel 3 , antenna 7, vert pol	
			2360	52	Ave	2	802.11b, channel 6 , antenna 7, vert pol	
			2390	49.2	Ave	4.8	802.11b, channel 6 , antenna 7, vert pol	
			2360	51.4	Ave	2.6	802.11b, channel 9 , antenna 7, vert pol	
			2390	47.3	Ave	6.7	802.11g, channel 1, antenna 1, horz pol	
			2360	48.7	Ave	5.3	802.11g, channel 1, antenna 1, vert pol	
			2390	52.3	Ave	1.7	802.11g, channel 1, antenna 1, vert pol	
			2360	50	Ave	4	802.11g, channel 6 , antenna 1, vert pol	
			2360	48.8	Ave	5.2	802.11g, channel 1, antenna 2, horz pol	
			2390	46.2	Ave	7.8	802.11g, channel 1, antenna 2, horz pol	
			2360	51.1	Ave	2.9	802.11g, channel 1, antenna 2, vert pol	
			2390	51.9	Ave	2.1	802.11g, channel 1, antenna 2, vert pol	
			2360	48.1	Ave	5.9	802.11g, channel 6 , antenna 2, horz pol	
			2360	52.5	Ave	1.5	802.11g, channel 6 , antenna 2, vert pol	
			2390	46.6	Ave	7.4	802.11g, channel 6 , antenna 2, vert pol	
			2360	45.1	Ave	8.9	802.11g, channel 11 , antenna 2, horz pol	
			2360	49.4	Ave	4.6	802.11g, channel 11 , antenna 2, vert pol	

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
 (continued)

FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBmV/m @ 3m]	Meas. Type	Margin to Limit [dB]		
							Test Comments	
HZB-AP700	Proxim	ORINOCO AP-700 802.11b/g Access Point	2390	51.9	Ave	2.1	802.11g, channel 1, antenna 3, vert pol	
			2390	44.3	Ave	9.7	802.11g, channel 6, antenna 3, vert pol	
			2390	44.7	Ave	9.3	802.11g, channel 1, antenna 4, horz pol	
			2360	47	Ave	7	802.11g, channel 1, antenna 4, vert pol	
			2390	52.7	Ave	1.3	802.11g, channel 1, antenna 4, vert pol	
			2356	45.2	Ave	8.8	802.11g, channel 6, antenna 4, horz pol	
			2360	44.5	Ave	9.5	802.11g, channel 6, antenna 4, horz pol	
			2356	51	Ave	3	802.11g, channel 6, antenna 4, vert pol	
			2360	51.4	Ave	2.6	802.11g, channel 6, antenna 4, vert pol	
			2390	51.6	Ave	2.4	802.11g, channel 6, antenna 4, vert pol	
			2360	48.2	Ave	5.8	802.11g, channel 11, antenna 4, vert pol	
			2360	48.1	Ave	5.9	802.11g, channel 1, antenna 5, vert pol	
			2390	52.8	Ave	1.2	802.11g, channel 1, antenna 5, vert pol	
			2360	52.7	Ave	1.3	802.11g, channel 6, antenna 5, vert pol	
			2390	50.5	Ave	3.5	802.11g, channel 6, antenna 5, vert pol	
			2360	48.7	Ave	5.3	802.11g, channel 11, antenna 5, vert pol	
			2360	46	Ave	8	802.11g, channel 1, antenna 6, vert pol	
			2390	52.5	Ave	1.5	802.11g, channel 1, antenna 6, vert pol	
			2360	49.6	Ave	4.4	802.11g, channel 6, antenna 6, vert pol	
			2390	48.6	Ave	5.4	802.11g, channel 6, antenna 6, vert pol	
			2360	45.9	Ave	8.1	802.11g, channel 11, antenna 6, vert pol	
			2360	51	Ave	3	802.11g, channel 3, antenna 7, vert pol	
			2390	52	Ave	2	802.11g, channel 3, antenna 7, vert pol	
			2360	51.4	Ave	2.6	802.11g, channel 6, antenna 7, vert pol	
			2390	53.3	Ave	0.7	802.11g, channel 6, antenna 7, vert pol	
			2360	63.5	Peak	10.5	802.11g, channel 9, antenna 7, vert pol	
			2360	52.2	Ave	1.8	802.11g, channel 9, antenna 7, vert pol	
L6ARBG40GW, L6ARBG41GW	Research in Motion	BlackBerry 8820	2390	66.2	Peak	7.8	802.11b/g, channel 1, vert pol	
L6ARBG40GW	Research in Motion	BlackBerry 8320	2390	68.4	Peak	5.6	802.11b/g, channel 1, horz pol	
L6ARBR40GW	Research in Motion	BlackBerry 8120	2390	47.6	Ave	6.4	802.11b/g, channel 1, horz pol	
A3LSMTW6100	Samsung	SMT-W6100 802.11b/g Wi-Fi enabled phone	2390	65.53	Peak	8.47	802.11b, channel 1, horz pol.	
			2390	48.11	Ave	5.89	802.11b, channel 1, horz pol.	
			2390	67.22	Peak	6.78	802.11g, channel 1, horz pol.	
A3L-NP-Q1	Samsung	Q1 Ultra Mobile PC	2369.6	53.59	Ave	0.41	802.11b, channel 1, foxconn ant, horz pol.	
			2369.2	52.99	Ave	1.01	802.11b, channel 1, foxconn ant, vert pol.	
			2390	53.57	Ave	0.43	802.11g, channel 1, foxconn ant, horz pol.	
			2389.47	71.11	Peak	2.89	802.11g, channel 1, foxconn ant, horz pol.	
			2390	53.09	Ave	0.91	802.11g, channel 1, foxconn ant, vert pol.	
			2389.87	72.16	Peak	1.84	802.11g, channel 1, foxconn ant, vert pol.	
			2368.8	53.29	Ave	0.71	802.11b, channel 1, KAE ant, horz pol.	
			2369.2	53.94	Ave	0.06	802.11b, channel 1, KAE ant, vert pol.	
			2364.4	53.49	Ave	0.51	802.11g, channel 1, KAE ant, horz pol.	
			2389.73	67.06	Peak	6.94	802.11g, channel 1, KAE ant, horz pol.	
			2365.2	51.29	Ave	2.71	802.11g, channel 1, KAE ant, vert pol.	
			2390	66.57	Peak	7.43	802.11g, channel 1, KAE ant, vert pol.	
			2389.07	71.3	Peak	2.7	802.11g, channel 1, foxconn ant, horz pol.	
			2390	53.44	Ave	0.56	802.11g, channel 1, foxconn ant, horz pol.	
			2389.87	71.25	Peak	2.75	802.11g, channel 1, foxconn ant, vert pol.	
			2390	52.62	Ave	1.38	802.11g, channel 1, foxconn ant, vert pol.	
A3LNP-Q1UP	Samsung	Q1 Ultra Premium Ultra Mobile PC	2386.13	50.47	Ave	3.53	802.11b, channel 1, WNC ant, horz pol.	
			2390	72.56	Peak	1.44	802.11g, channel 1, WNC ant, horz pol.	
			2390	52.92	Ave	1.08	802.11g, channel 1, WNC ant, horz pol.	
			2390	72.38	Peak	1.62	802.11g, channel 1, WNC ant, vert pol.	
			2390	53.23	Ave	0.77	802.11g, channel 1, WNC ant, vert pol.	
			2388.83	70.24	Peak	3.76	802.11g, channel 1	
AK8PCG6J1L	Sony	VAIO notebook PC with	2389.58	51.28	Ave	2.72	802.11g, channel 1	

Exhibit B: Summary of Selected Part 15 Unlicensed Device Compliance Data
(continued)

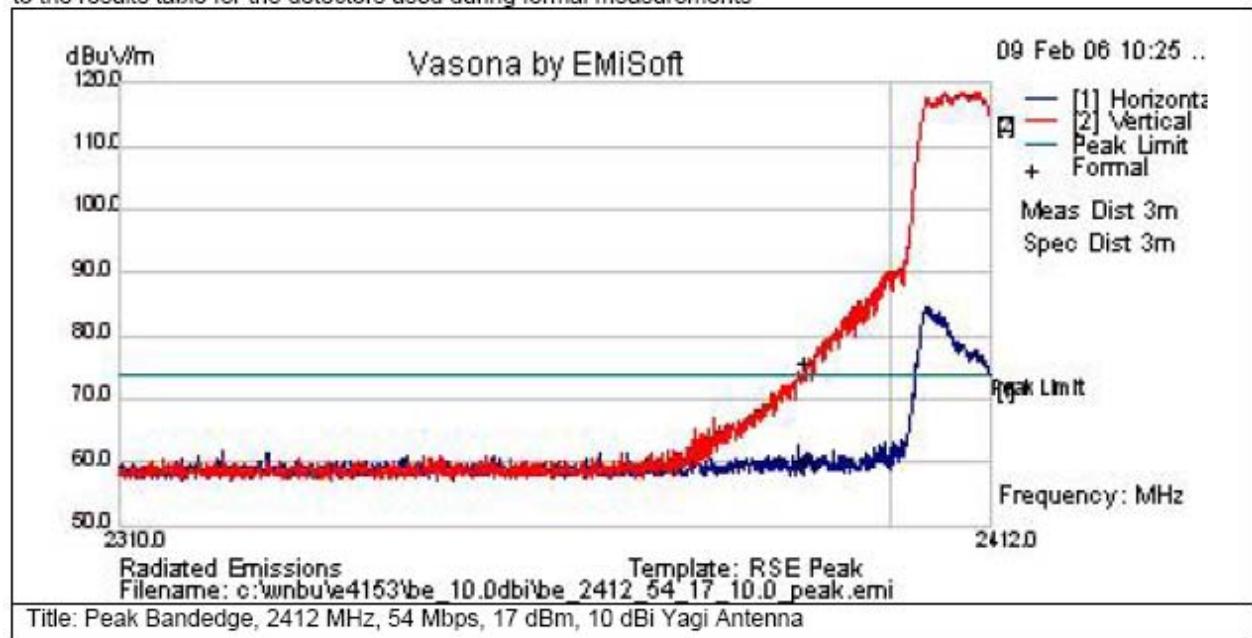
FCC ID	Manufacturer	Device Description	Freq. [MHz]	Meas. Emission Level [dBuV/m @ 3m]	Meas. Type	Margin to Limit [dB]	Test Comments
QZE303	Trapeze	Model 430 802.11n Wi-Fi Access Point	2386.12	67.48	Peak	6.52	802.11b, channel 1
			2386.36	52.07	Ave	1.93	802.11b, channel 1
			2389.46	59.99	Peak	14.01	802.11g, channel 1
			2390	53.28	Ave	0.72	802.11g, channel 1
			2389.93	73.64	Peak	0.36	802.11n, 20MHz channel 1
			2389.93	52.4	Ave	1.6	802.11n, 20MHz channel 1
			2389.84	72.93	Peak	1.07	802.11n, 20MHz channel 6
			2390	53.57	Ave	0.43	802.11n, 20MHz channel 6
			2389.96	71.36	Peak	2.64	802.11n, 40MHz channel 3
			2390	53.92	Ave	0.08	802.11n, 40MHz channel 3
			2390	65.85	Peak	8.15	802.11n, 40MHz channel 6
			2390	53.39	Ave	0.61	802.11n, 40MHz channel 6
			2390	61.96	Peak	12.04	802.11n, 40MHz channel 9
			2390	50.8	Ave	3.2	802.11n, 40MHz channel 9
QZE150	Trapeze	MP-71 802.11b/g Wi-Fi Access Point	2360	61.23	Peak	12.77	802.11b, channel 1, vert pol
			2360	49.72	Ave	4.28	802.11b, channel 1, vert pol
			2390	72.54	Peak	1.46	802.11g, channel 1, vert pol
			2390	52.11	Ave	1.89	802.11g, channel 1, vert pol
QZE250 (O9C-AP3850)	Trapeze (3Com)	MP-400 (3Com AP3850) 802.11b/g Wi-Fi Access Point	2386.38	65.49	Peak	8.51	Mode 1, 802.11b, channel 1
			2386.38	50.84	Ave	3.16	Mode 1, 802.11b, channel 1
			2390	68.34	Peak	5.66	Mode 1, 802.11g, channel 1
			2390	51.97	Ave	2.03	Mode 1, 802.11g, channel 1
			2386.38	63.79	Peak	10.21	Mode 2, 802.11b, channel 1
			2386.38	52.74	Ave	1.26	Mode 2, 802.11b, channel 1
			2390	67.58	Peak	6.42	Mode 2, 802.11g, channel 1
			2390	52.23	Ave	1.77	Mode 2, 802.11g, channel 1
			2374.41	58.52	Peak	15.48	Mode 3, 802.11b, channel 1
			2374.41	47.43	Ave	6.57	Mode 3, 802.11b, channel 1
			2390	70.56	Peak	3.44	Mode 3, 802.11g, channel 1
			2390	51.79	Ave	2.21	Mode 3, 802.11g, channel 1
			2359.78	62.58	Peak	11.42	Mode 4, 802.11b, channel 1
			2359.78	52.52	Ave	1.48	Mode 4, 802.11b, channel 1
			2390	72.08	Peak	1.92	Mode 4, 802.11g, channel 1
			2390	52.83	Ave	1.17	Mode 4, 802.11g, channel 1

Exhibit C: Selected Part 15 Unlicensed Device Radiated OOB E Spectra Measurements

Subtest Number: 20152 - 4		Subtest Date: 09-Feb-2006
Engineer	James Nicholson	
Lab Information	Building P, 10m Anechoic	
Subtest Results		
Subtest Title	Peak Bandedge, 2412 MHz, 54 Mbps, 17 dBm, 10 dBi Yagi Antenna	
Subtest Result	Pass	
Highest Frequency	2412.0	
Lowest Frequency	2310.0	
Comments on the above Test Results	1 MHz RBW, 1 MHz VBW	

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2390	51.6	23.9	-1.7	73.7	Pk	V	166	178	74	-0.3	Pass	
2390	35.9	23.9	-1.7	58.1	Pk	H	166	178	74	-15.9	Pass	

Figure 1: 802.11g lower band edge OOB E for Cisco Aironet 1250AG Series Wi-Fi Access Point (FCC ID: LDK102060)⁷

⁷ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=690751&native_or_pdf=pdf

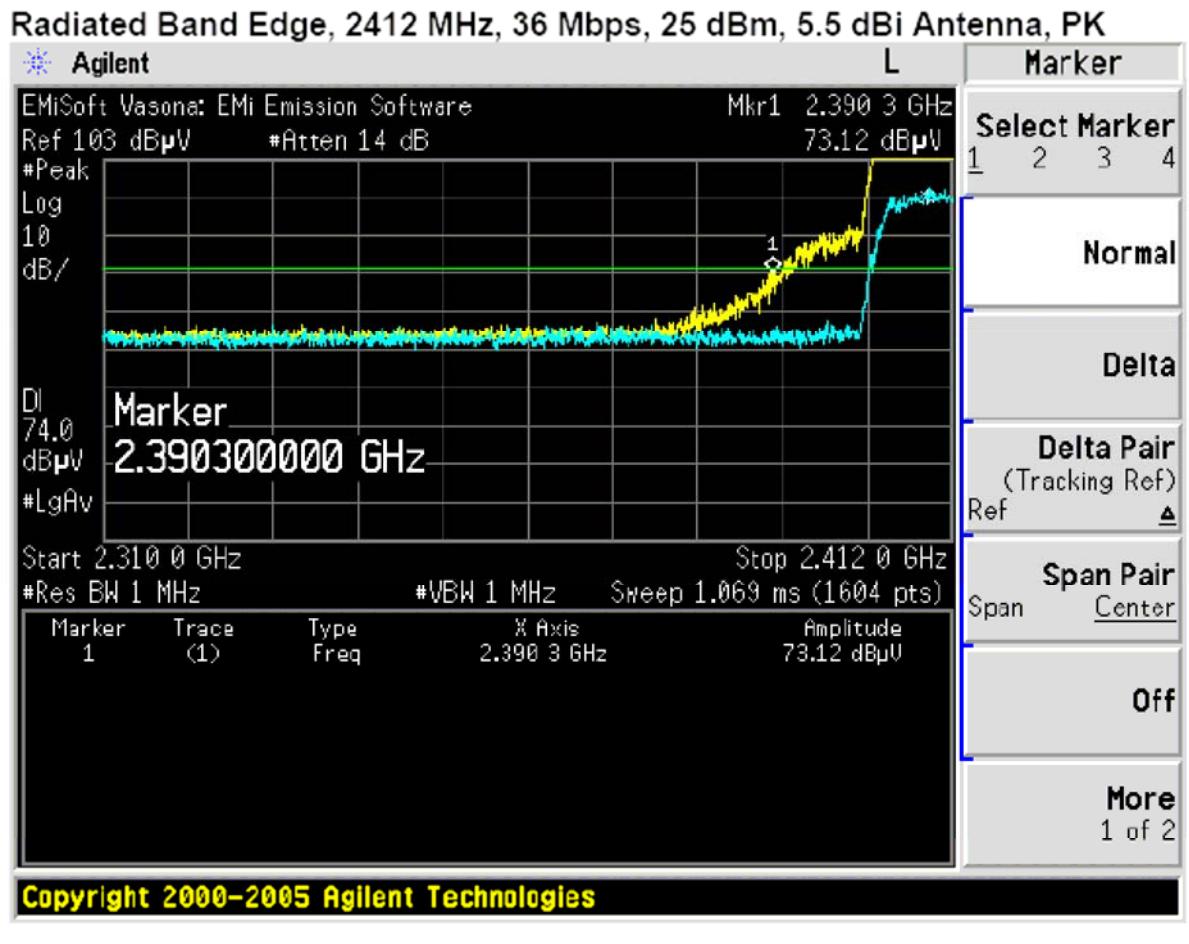


Figure 2: 802.11g lower band edge OOB for Cisco Aironet LAP1510 Series Lightweight Outdoor Wi-Fi Access Point (FCC ID: LDK102058)⁸

⁸ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=595668&native_or_pdf=pdf

RESULTS – 802.11b ANT-7, 12 dBi Antenna

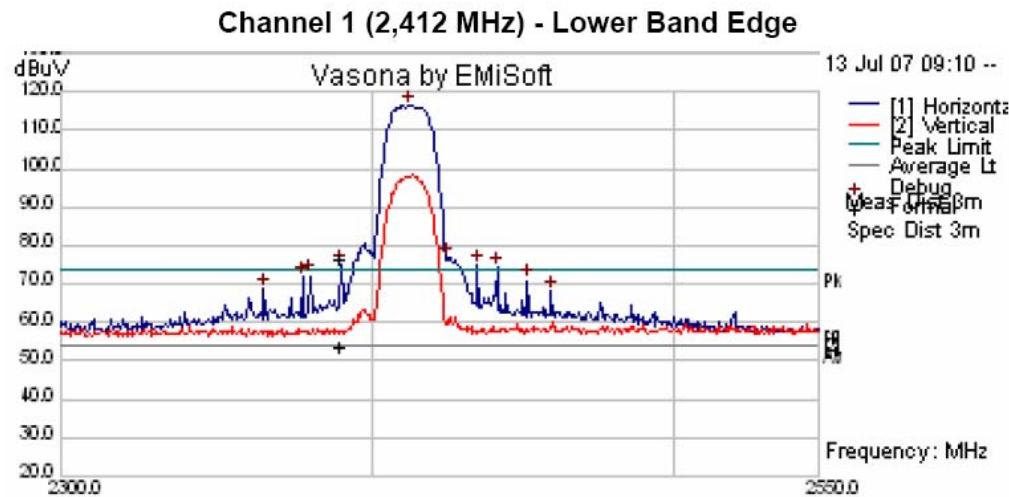


Figure 3: 802.11b lower band edge OOB Emissions for Aruba AP-70 Wi-Fi Access Point (FCC ID: Q9DAP70SDR)⁹

⁹ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=820101&native_or_pdf=pdf

RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)

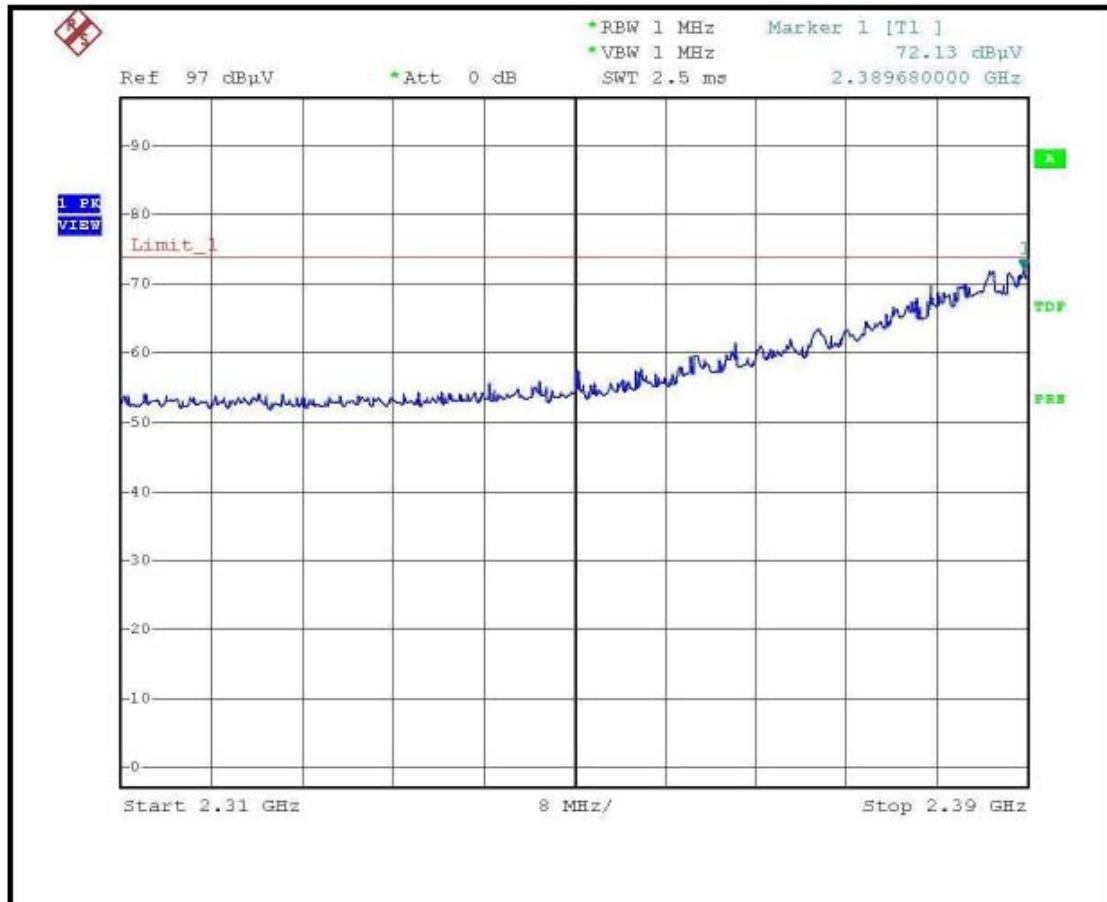


Figure 4: 802.11n lower band edge OOB Emissions for Linksys WRT350N Wi-Fi Access Point (FCC ID: Q87-WRT350N)¹⁰

¹⁰ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=711130&native_or_pdf=pdf

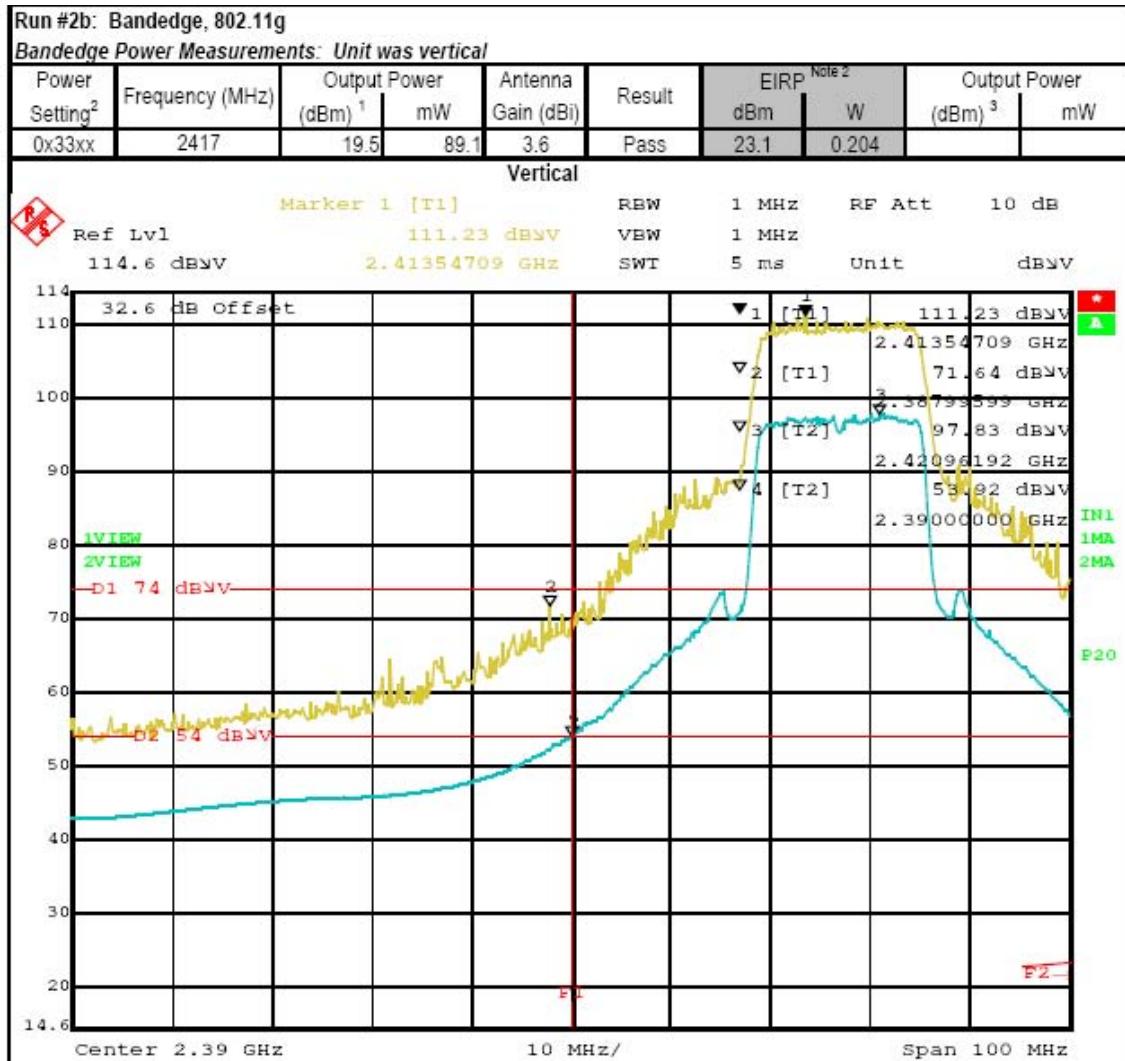


Figure 5: 802.11g lower band edge OOB for Linksys WRT600N Wi-Fi Access Point (FCC ID: Q87-WRT600NV11)¹¹

¹¹ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=789037&native_or_pdf=pdf

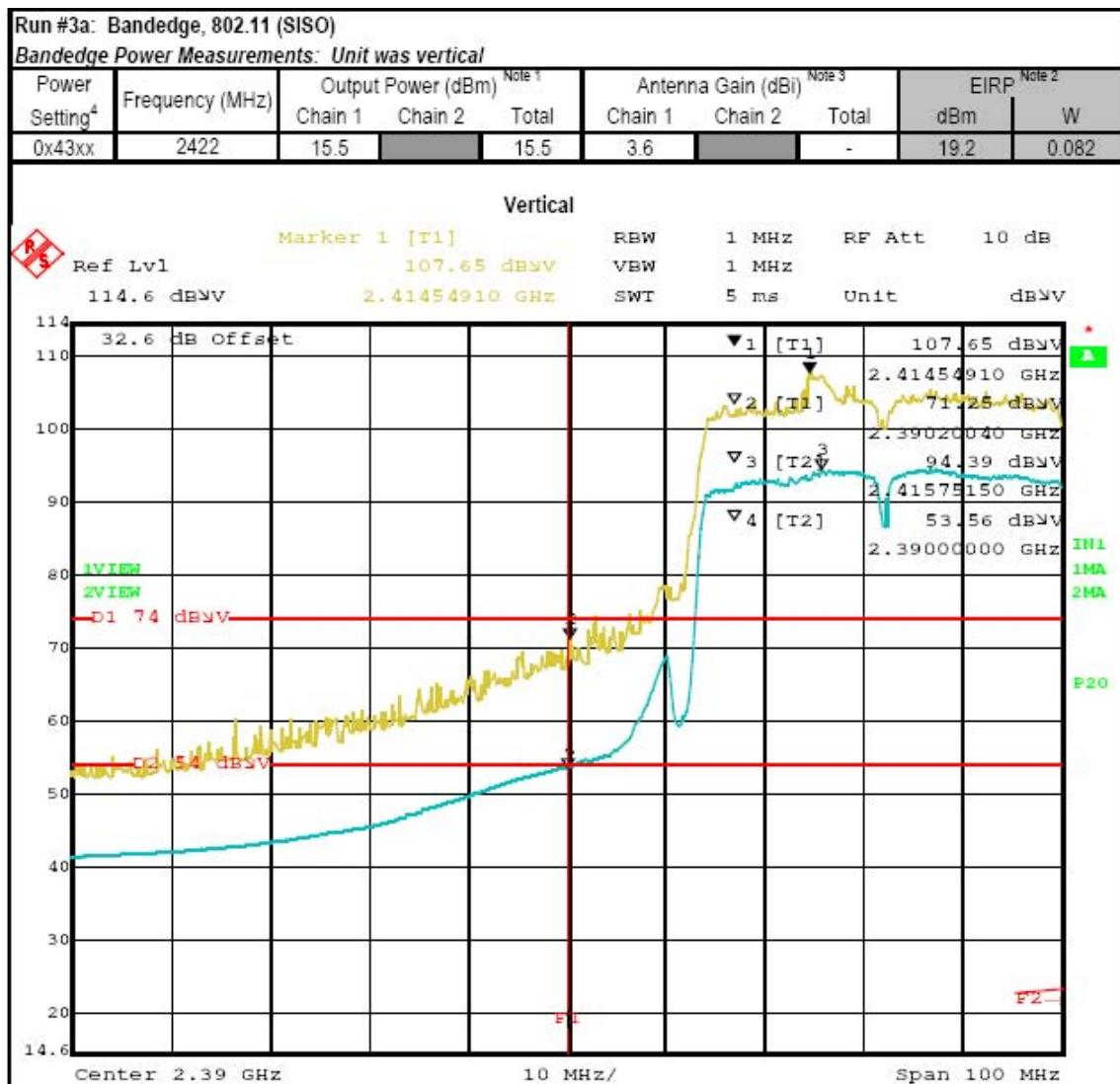


Figure 6: 802.11n SISO lower band edge OOB for Linksys WRT600N Wi-Fi Access Point (FCC ID: Q87-WRT600NV11)¹²

¹² Id.

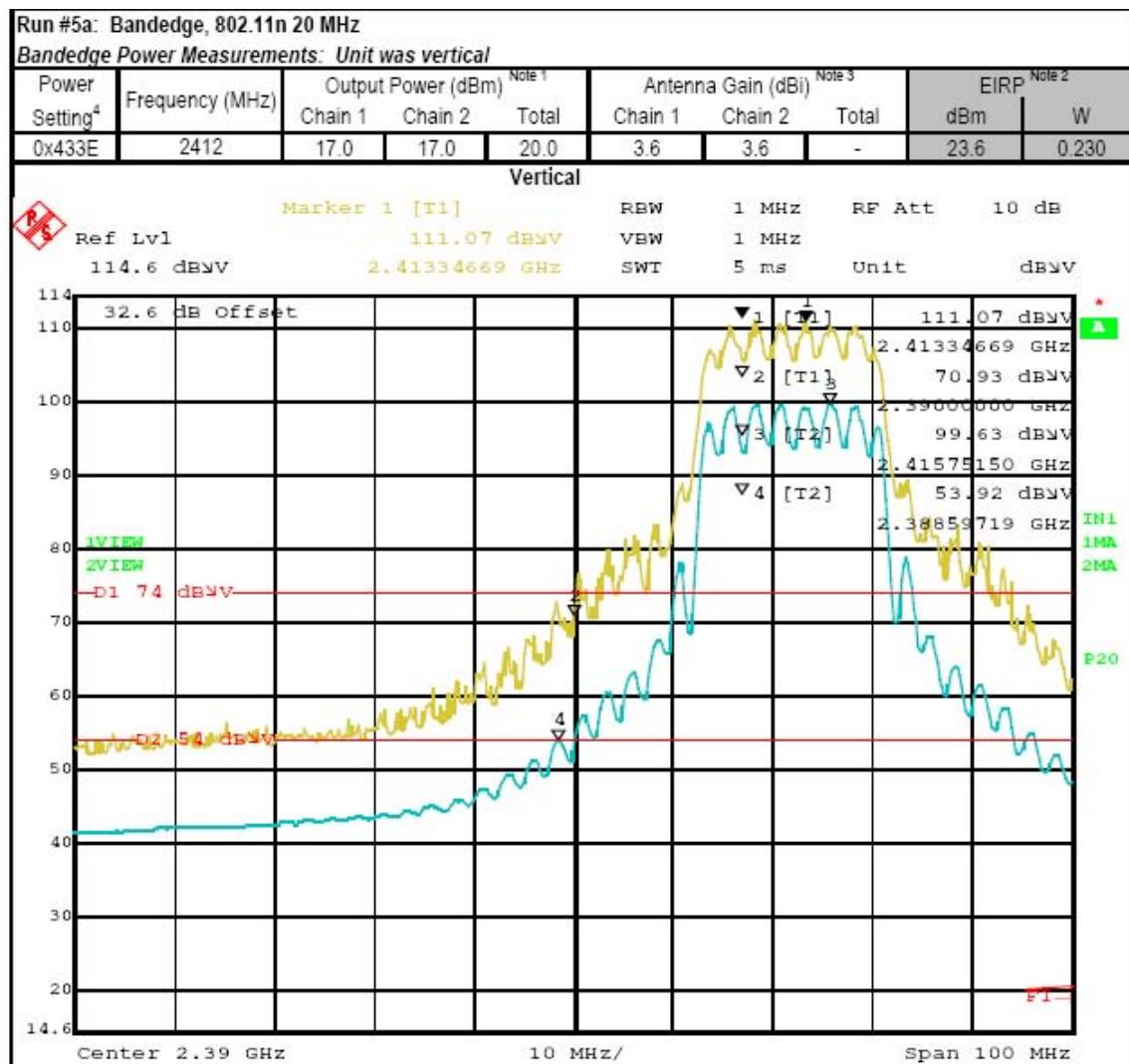


Figure 7: 802.11n lower band edge OOB for Linksys WRT600N Wi-Fi Access Point (FCC ID: Q87-WRT600NV11)¹³

¹³ Id.

Detector mode : Peak

Polarity : Vertical

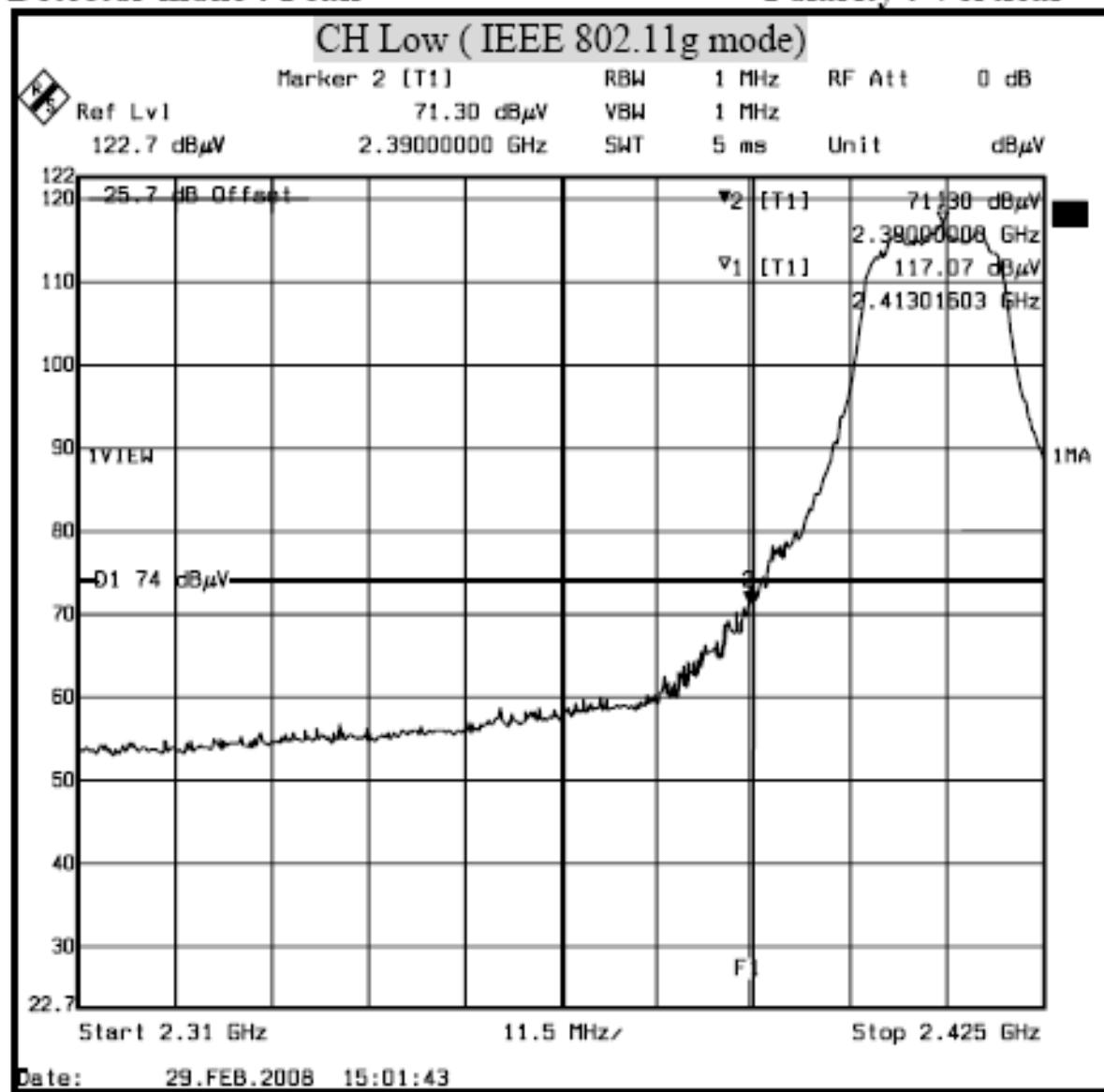


Figure 8: 802.11g lower band edge OOB for D-Link DAP-2533 Wi-Fi Access Point (FCC ID: KA2AP2553A1)¹⁴

¹⁴ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=979467&native_or_pdf=pdf

Detector mode : Peak

Polarity : Vertical

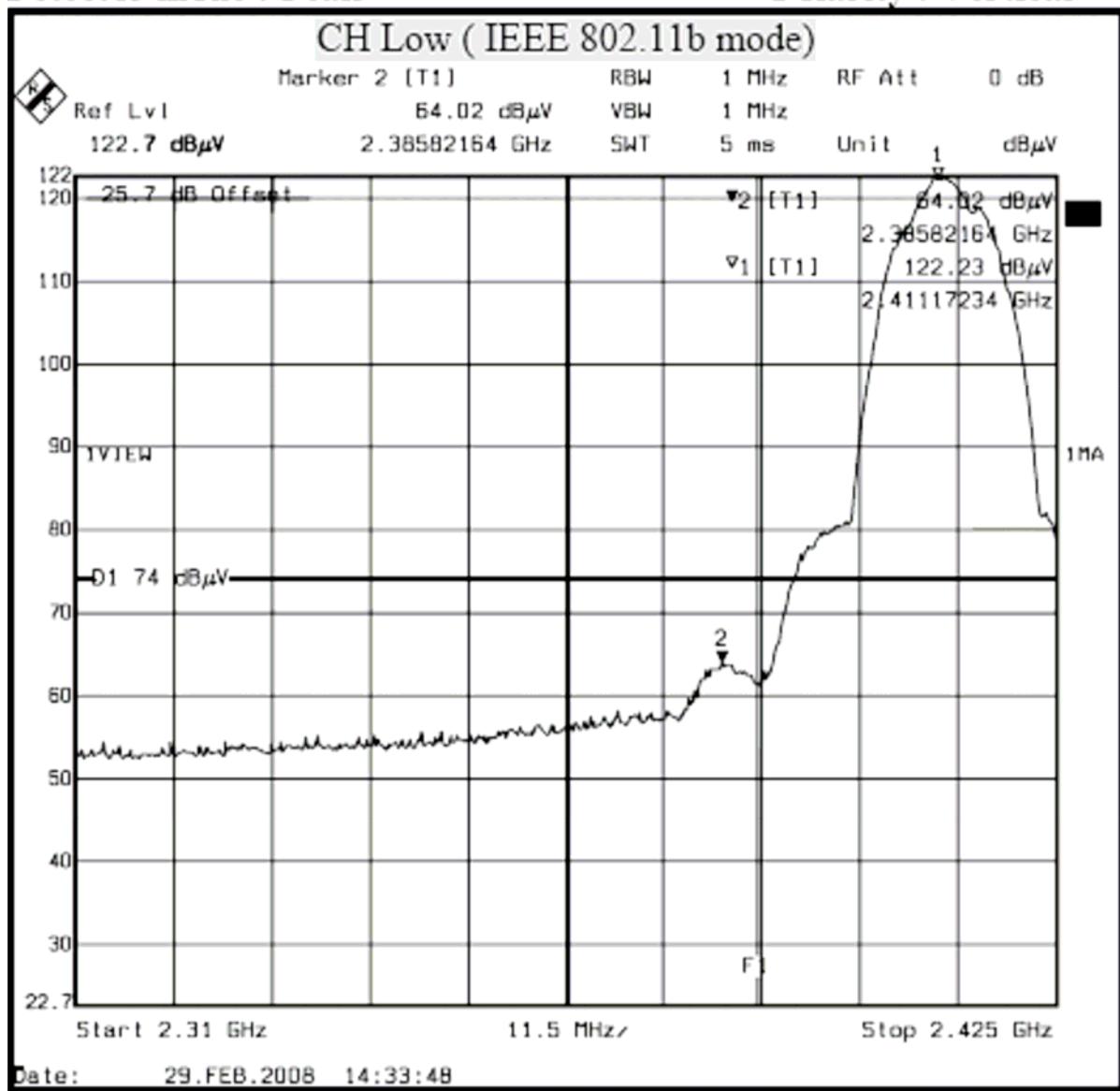


Figure 9: 802.11b lower band edge OOB for D-Link DAP-2533 Wi-Fi Access Point (FCC ID: KA2AP2553A1)¹⁵

¹⁵ Id.

802.11g (2412MHz) PEAK

CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

Test Mode: WLAN-OFDM, ch1

Ant Orientation: V

EUT Orientation: +45° from horizontal

Test Engineer: Ed

Voltage: Battery

Comments: maximized Peak

SWEEP TABLE: "FCC15.247 LBE PK"

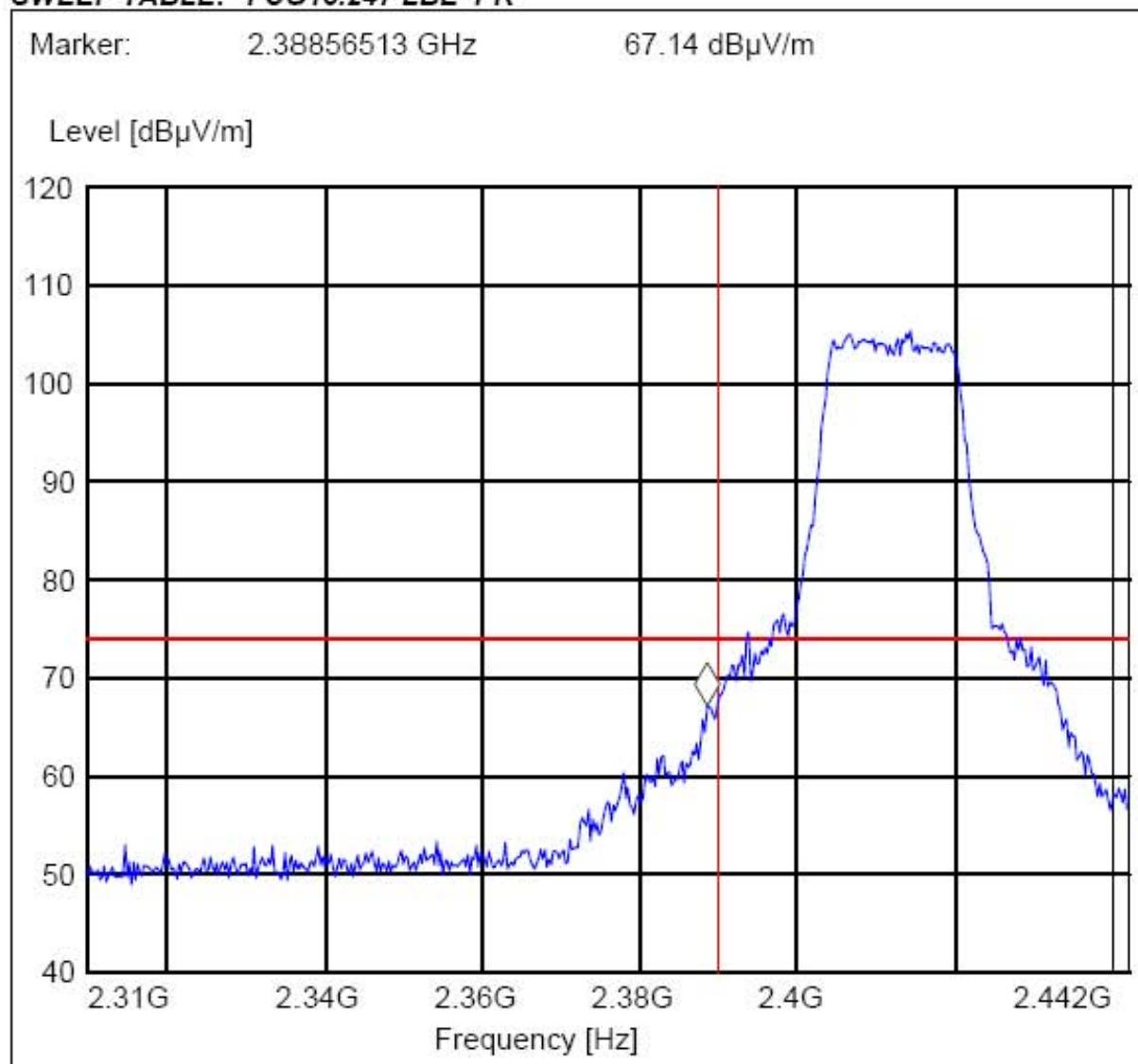
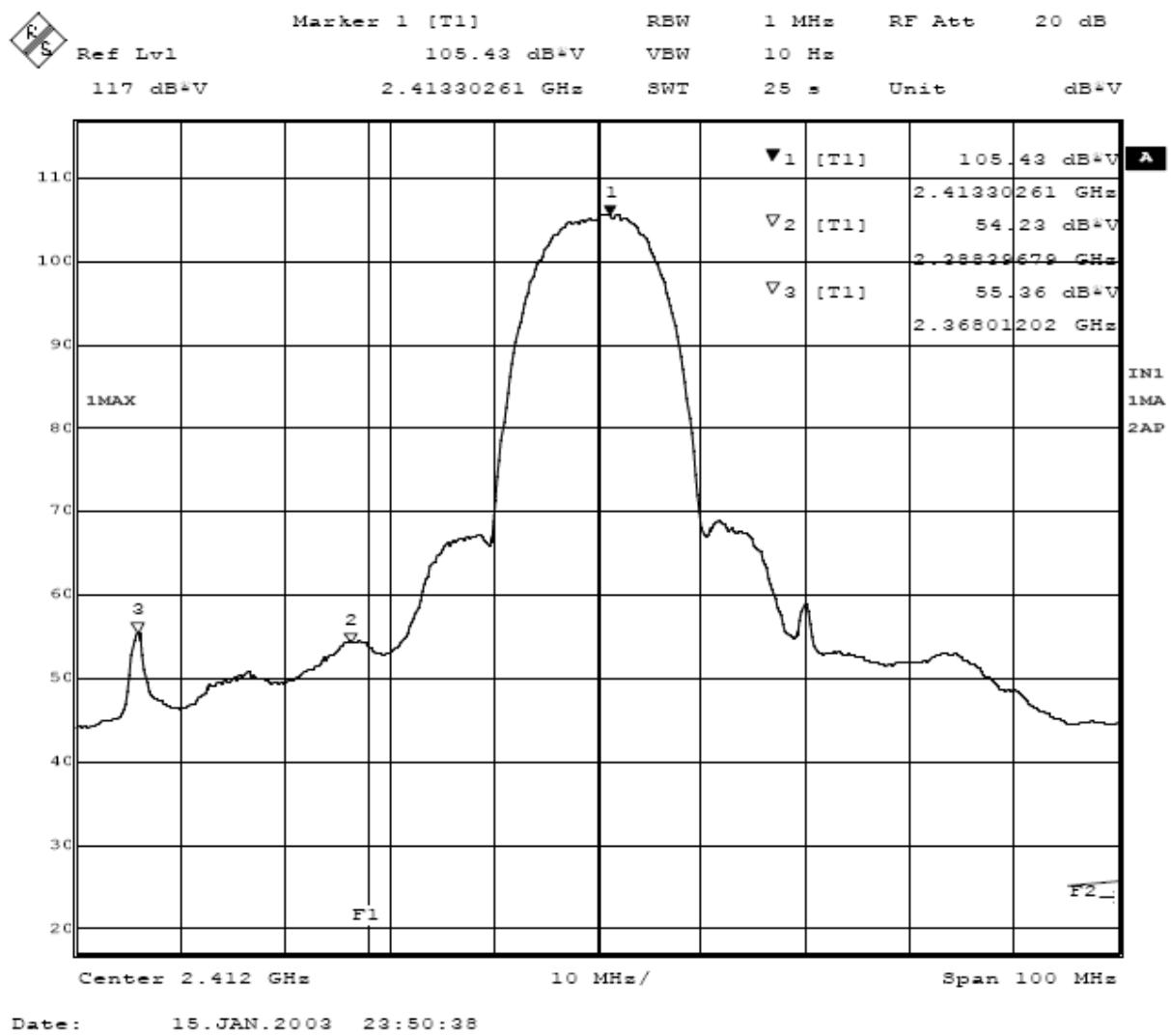


Figure 10: 802.11g lower band edge OOB E for Apple iPhone (FCC ID: BCGA1203)¹⁶

¹⁶ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=767386&native_or_pdf=pdf



Plot 7-3-2 Ch.1 2412MHz TX11Mb/s (Average)

Figure 11: 802.11b lower band edge OOB for IBM ThinkPad G40 notebook PCs (FCC ID: ANO20020306A1L)¹⁷

¹⁷ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=318314&native_or_pdf=pdf

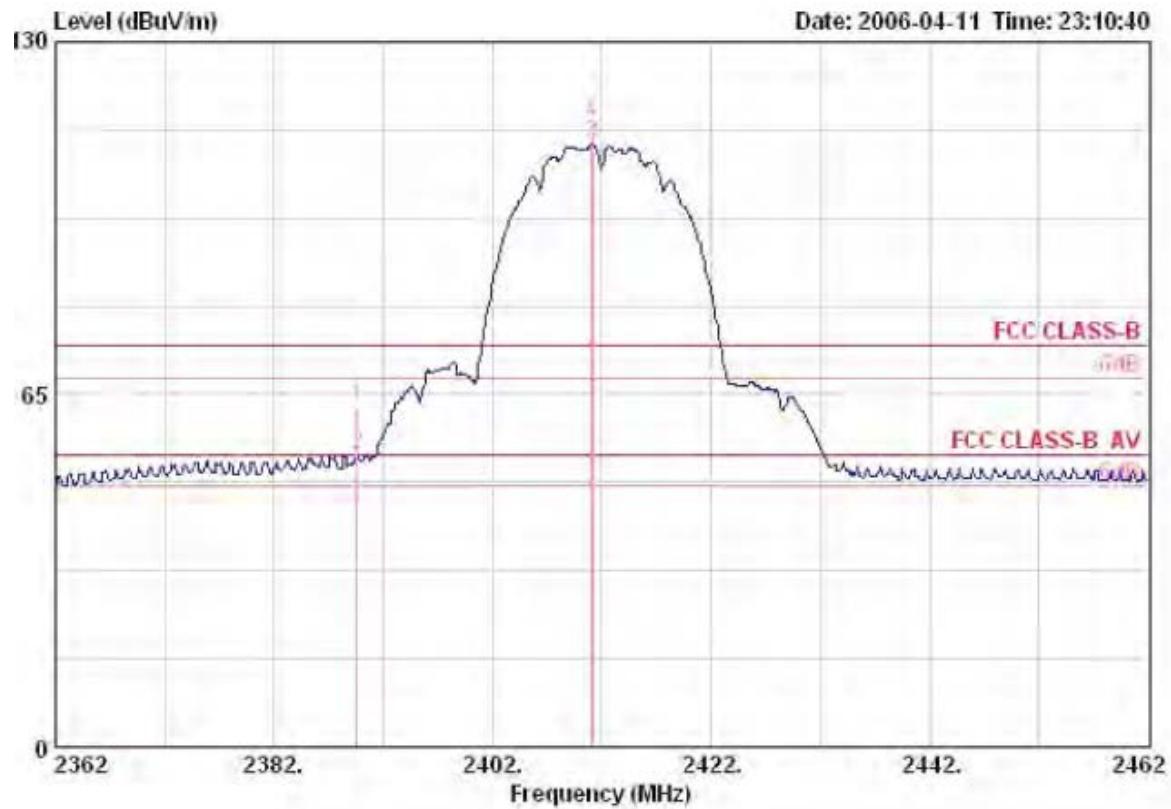


Figure 12: 802.11b lower band edge OOB Emissions for Meru OAP-180 Outdoor Wi-Fi Access Point (FCC ID: RE7-OAP180)¹⁸

¹⁸ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=799701&native_or_pdf=pdf

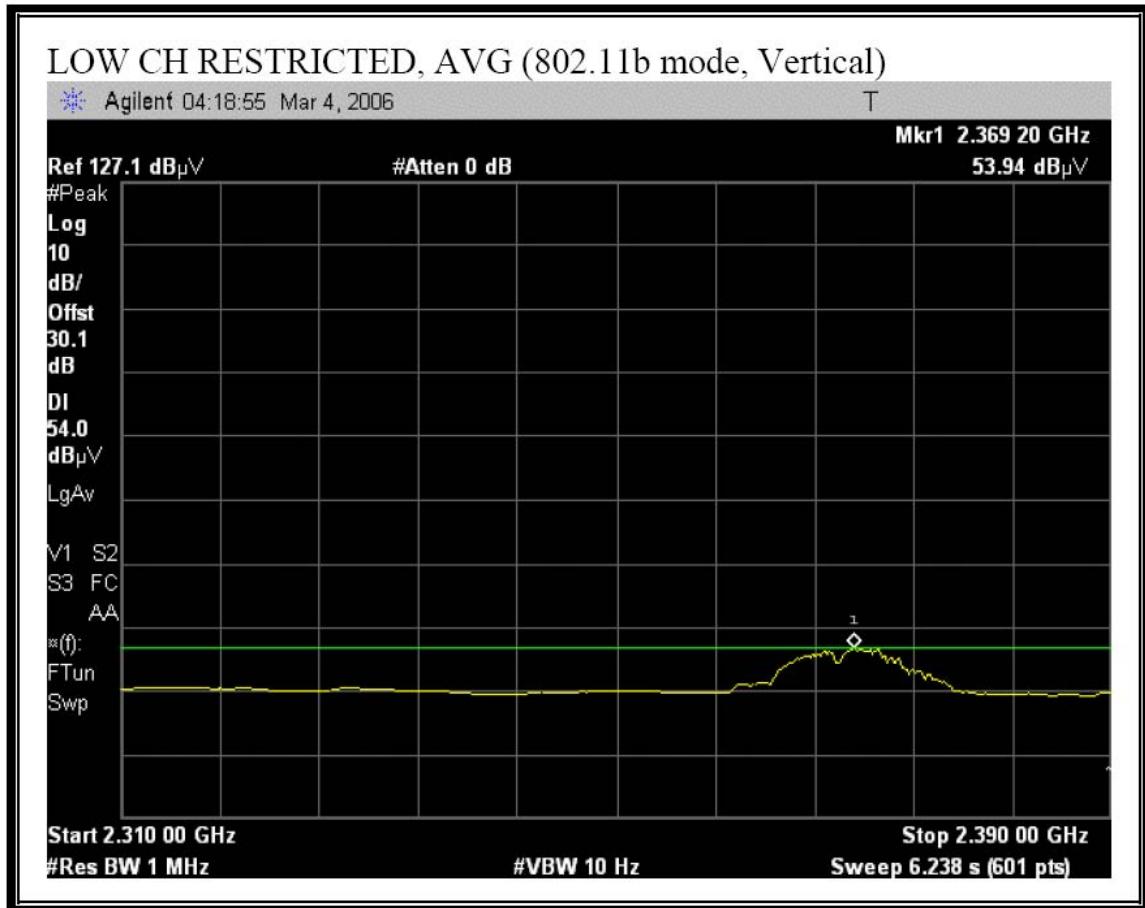


Figure 13: 802.11b lower band edge OOB for Samsung Q1 Ultra Mobile PC (FCC ID: A3L-NP-Q1)¹⁹

¹⁹ https://gullfoss2.fcc.gov/prod/oet/forms/blobs/retrieve.cgi?attachment_id=641552&native_or_pdf=pdf

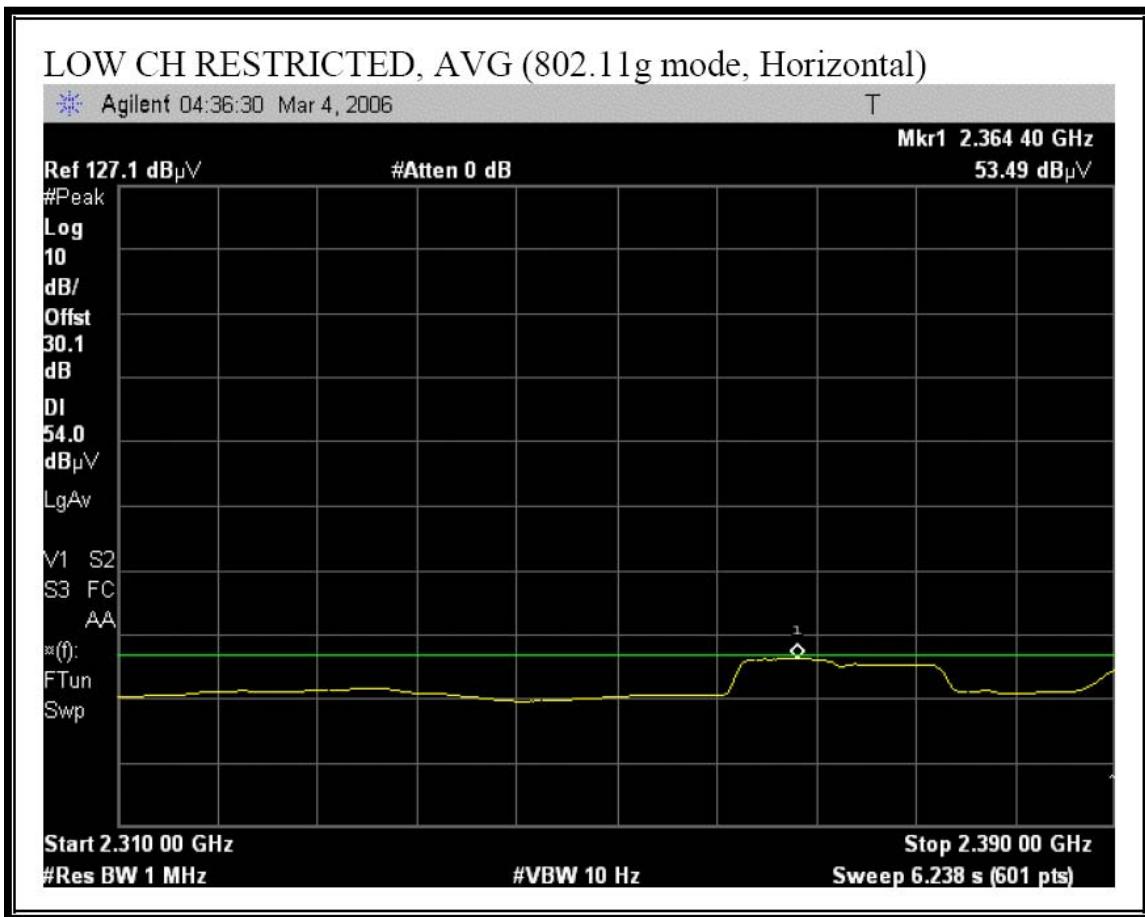


Figure 14: 802.11g lower band edge OOB for Samsung Q1 Ultra Mobile PC (FCC ID: A3L-NP-Q1)²⁰

²⁰ Id.